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FIELD MANUAL

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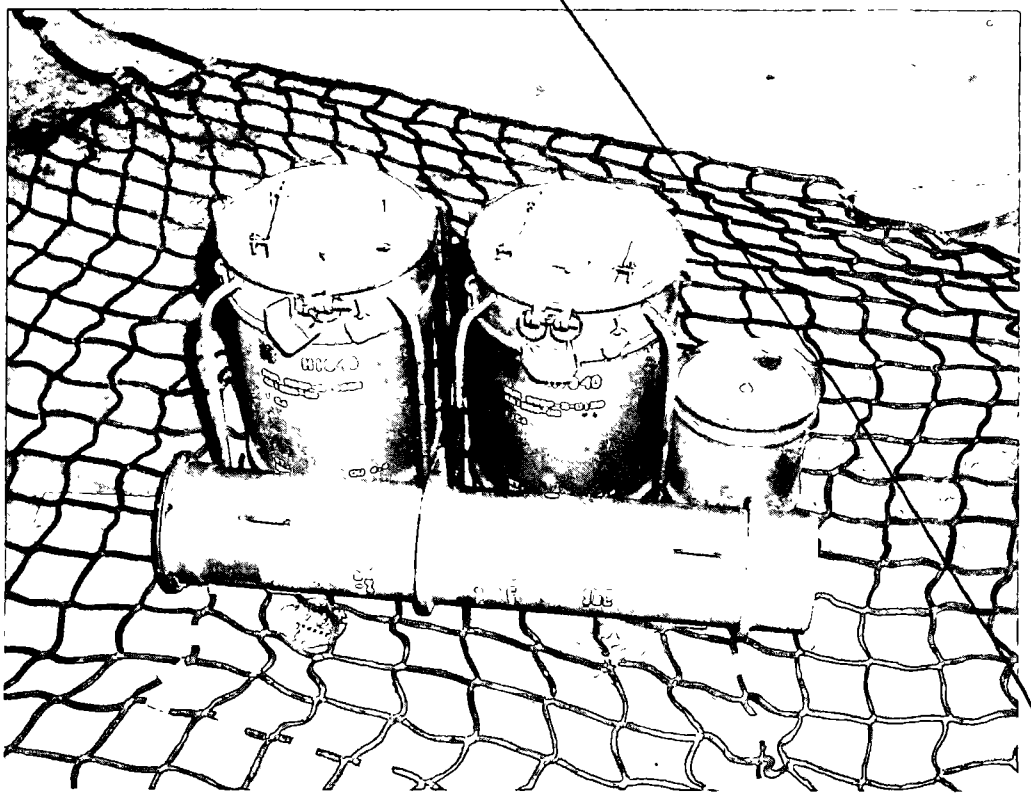
AIR TRANSPORT PROCEDURES

TRANSPORT OF 8-INCH ATOMIC PROJECTILE, M422, BY US ARMY HELICOPTERS

TRANSPORT OF 8-INCH ATOMIC PROJECTILE, M422, COMPLETE MISSION LOAD, BY US ARMY CH-47 HELICOPTER



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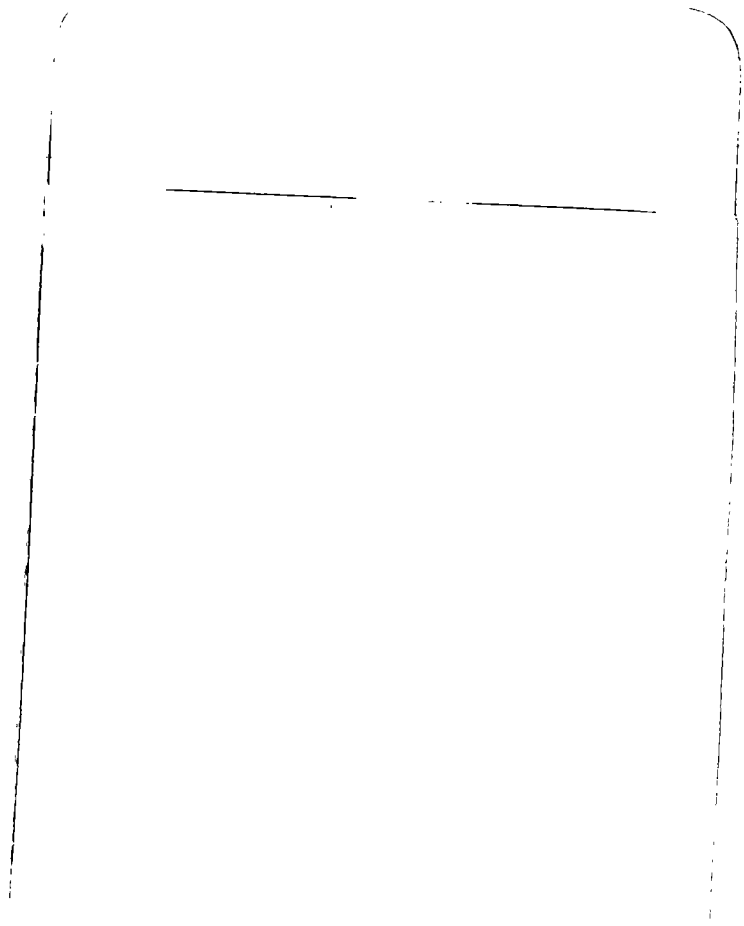

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15 Jun 1988

Headquarters,
Department of the Army
Washington, DC
27 October 1984

Immediate Action
INTERIM CHANGE

in Army Studies

FM 55-218
Interim Change
No. I01
Expires 27 October 1986

Air Transport Procedures

Transport of 8-Inch Atomic Projectile, M422,
By US Army Helicopters
Transport of 8-Inch Atomic Projectile, M422,
By US Army CH-47 Helicopter

Justification. This interim change provides procedures for the proper application of tiedown straps used to secure nuclear weapons and components on board US Army helicopters. This guidance is safety-related and is required to prevent the inadvertent loosening of the tiedown straps during flight.

Expiration. This interim change expires 2 years from date of publication and will be destroyed at that time unless sooner rescinded or superseded by a permanent change.

1. FM 55-218, 15 December 1982, is changed as follows:

Page 2-2. Paragraph 2-2e is superseded as follows:

e. When attaching tiedown straps to cargo and to tiedown fittings, tension each tiedown strap to form at least one and one-half turns on the take-up spool of the tensioning ratchet. The one and one-half turns must be taken after webbing to webbing contact. Continue to tighten each tiedown, applying approximately equal tension throughout the tiedown arrangement to prevent movement of the cargo. Check tiedowns during flight and tighten as necessary.

2. Post this change per DA Pam 310-13.

3. File this interim change in front of the publication.

(MTT-TRC)

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Distribution:

To be distributed in accordance with DA Form 12-31 Operator Maintenance requirements for UHID/H; CH-54A; CH-54B; CH-47B/C/D; UH-60A; and DA Form 12-35 Operator Maintenance requirements for Projectile M422; and DA Form 12-34B requirements for Air Transport Procedures: Nuclear Warheads and Projectiles. A

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FIELD MANUAL
NO. 55-218

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *15 December 1982*

AIR TRANSPORT PROCEDURES

TRANSPORT OF 8-INCH ATOMIC PROJECTILE, M422 BY US ARMY HELICOPTERS

TRANSPORT OF 8-INCH ATOMIC PROJECTILE, M422, COMPLETE MISSION LOAD, BY US ARMY CH-47 HELICOPTER

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(Front cover) *Projectile case, M500, with projectile, M422 (lengthwise), two containers, H1343, and accessory parts case (MS can), positioned on 5,000-pound-capacity nylon cargo net.*

*This manual supersedes FM 55-218, 20 February 1979.

CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

a. This manual presents Department of the Army approved procedures for transport of the 8-inch atomic projectile, M422, and the M422 projectile, complete mission load, by US Army helicopters. Materials and qualified personnel needed to prepare, load, tie down, and unload, or to rig and derig the projectile containers are prescribed herein. References are shown in the appendix.

b. The procedures in this manual provide for:

(1) Internal transport of the 8-inch atomic projectile, in either the stockpile storage or assembled storage configuration, by UH-1-series, UH-60, CH-47, and CH-54 helicopters.

(2) Internal transport of the M422 projectile, complete mission load, by CH-47 helicopter.

(3) External transport of the 8-inch atomic projectile, in the stockpile storage configuration, by UH-1-series, UH-60, CH-47, and CH-54 helicopters.

c. The above described loads are not maximum helicopter loads. Additional internal cargo, including different types of nuclear weapons and/or personnel within allowable load limits and restrictions prescribed by AR 50-5 or FM 100-50, whichever is applicable, and pertinent safety regulations (app), may be transported.

d. This manual also provides for emergency internal and external movement, by helicopter, of the containers comprising the M422 projectile, for military contingency, logistic supply, and evacuation.

e. Times given to prepare, load, tie down, and unload or rig and derig the loads described in this manual may vary, depending upon existing conditions.

NOTE

References in this manual to the M422 atomic projectile also apply to the M422A1 atomic projectile.

1-2. Reporting of Publication Improvements

Users of this publication are encouraged to recommend changes and submit comments for its improvement. Comments should be prepared on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded to Commander, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRC, PO Box 6276, Newport News, VA 23606 (electrically transmitted messages should be addressed to CDRMTMCTEA FT EUSTIS VA//MTT-TRC//).

1-3. Definitions of Warnings, Cautions, and Notes

When used in this manual, warnings, cautions, and notes emphasize important or critical guidance. They are used for the following conditions:

a. Warning. Instructions that, if not followed, could result in injury to or death of personnel.

b. Caution. Instructions that, if not strictly observed, could result in damage to, or destruction of, equipment.

c. Note. An operating procedure that must be emphasized.

CHAPTER 2

GENERAL SAFETY AND SECURITY MATTERS

WARNING

Nuclear weapons transported as *internal loads* by helicopters (chapters 4 and 6) will not be jettisoned under any circumstances. During emergency movements (external transport by helicopter, chapters 5 and 6), the inflight emergency procedures prescribed by the appropriate aircraft operator's manual will apply (para 4-3*i* and 4-31, AR 50-5).

2-1. Warnings

The following warnings will be observed by personnel performing operations, procedures, and practices that are included or implied in this manual. Disregard for these warnings could result in personal injury or loss of life.

a. Prior to each nuclear cargo mission, the helicopter commander will be familiar with provisions of AR 50-5, AR 50-5-1, AR 95-27, and FM 100-50 and insure compliance therewith. In addition, the commander will become familiar with the security, safety, and technical peculiarities of the cargo that may affect air transport. Flight plans will include provisions for avoiding built-up and heavily populated areas. When transporting the projectile containers in the universal military pod by CH-54 helicopter, the pod must be secured to the helicopter to preclude jettisoning the pod deliberately or inadvertently. Procedures for securing the pod to preclude jettisoning are prescribed in TM 55-1520-217-10/1 and TM 55-1520-217-10/2.

b. There are minimum spacing separations for the projectile in the assembled storage configuration. As a general rule, maintain 3 feet (0.9 meter) center-to-center spacing. If spacing is a problem, consult TM 9-1100-218-20, TM 39-20-7, and TM 39-45-51A for more detailed information. There are no minimum spacing requirements or numerical limits for the H1343 containers. The number of H1343 containers to be transported in a helicopter is limited by the available tiedowns and the tiedown patterns prescribed in this manual. Examples of H1343 container loads are shown in figures 6-5, 6-6, 6-7, 6-8, and 6-9.

c. To determine compatibility of any other nuclear weapons or other cargo as authorized by chapter 4, AR 50-5, chapter 1, AR 55-203, and FM 100-50 for transport with the projectile containers, ordnance support channels must be consulted. Information on compatibility is contained in TM 39-45-51C and TM 38-250, which are distributed to major headquarters and to direct support and general support levels. Restrictions listed in TM 39-20-7 will not be exceeded when additional types of nuclear weapons are transported along with the projectile containers.

d. Emergency destruction procedures for the projectile are contained in TM 39-50-8. Normally, emergency-destruct materials will not be carried on the same helicopter with nuclear weapons. In the isolated case where operational necessity limits the availability of escort aircraft, the theater commander may authorize emergency-destruct materials (including blasting caps) to be transported in the load-carrying helicopter. Such materials will be in packagings authorized for transportation, isolated from weapons as far as possible, and tied down to prevent movement. Only the number of destruct charges and blasting caps necessary to destroy the projectile containers will be carried aboard. Blasting caps in their container (recommend use of M2- and M19-series ammunition boxes) will be tied down separately and surrounded by a restrained sandbag barrier. Transport of electric blasting caps in helicopters is governed by paragraph C-26, TM 9-1300-206.

e. The projectile containers will be loaded and tied down in accordance with the procedures in this manual except that they may be repositioned for helicopter operational reasons, or when loading additional nuclear weapons or other cargo and/or personnel. If a location other than that shown in the respective tiedown diagram is used, the helicopter commander must insure that:

(1) M422 projectiles in the assembled storage configuration are separated by at least 3 feet (0.9 meter) (center-to-center spacing) from any other nuclear weapon or nuclear component.

(2) The number and load capacity of the tiedown devices are as prescribed in this manual.

(3) Tiedown devices restraining the projectile containers are secured to tiedown fittings in the same location relative to the containers as those fittings used in the pertinent tiedown diagram. Required restraint will be provided when the depicted tiedown pattern is maintained.

2-2. Operational Precautions

The following operational precautions will be observed

during loading, rigging, tiedown, transport, and unloading of the projectile containers.

a. Web strap tiedown assemblies used to secure the items described in this manual, are limited to a maximum time of usage (useful life) of 36 months. The time of usage will commence at the time the tiedowns are unpackaged for use by the using organization. At that time they will be marked using stencil ink TT-I-1795 (any contrasting color) with the unpackaged date (month and year) in at least ½-inch-high letters near the hook end of the strap. Upon expiration of the 36 month useful life, the tiedowns will be marked with a two inch wide band on both sides of the strap, near the previously marked date, using yellow number 33538 stencil ink TT-I-1795 or enamel TT-E-516.

NOTE

The CGU-1/B is the tiedown strap identified in the tables throughout this manual. However, the strap, web, universal tiedown (NSN 5340-00-980-9277) or the strap, web, tiedown (NSN 5340-01-089-4997) may be used in place of the CGU-1/B tiedown strap (NSN 1670-00-725-1437). Each identified tiedown strap has a rated strength of 5,000 pounds.

b. Prior to each usage, tiedowns and cargo slings will be inspected for burns, tears, punctures, or cuts. Additionally, metal items will be inspected for improper operation, corrosion, cracks, or distortion. If any of these conditions are present, the tiedowns or slings must be replaced. No strength testing of tiedowns or slings will be conducted. Additional storage, inspection, and maintenance criteria for tiedowns and slings are prescribed by 55-450-series technical manuals (app).

c. Web strap tiedown assemblies in use more than 36 months may be used to transport nuclear weapon trainers and training devices, and other cargo. However, the 36-month useful life criterion for tiedowns will still apply when transporting the weapon trainers and training devices, and other cargo within the same helicopter or pod transporting the items described in this manual.

d. Inspect the nylon cargo nets and the bag, cargo, aerial delivery, type A-22 to insure their serviceability. Cargo nets and bags in questionable condition will not be used.

e. When attaching tiedown devices to cargo and to tiedown fittings, approximately equal tension must be maintained throughout tiedown arrangements. Tighten the tiedowns to prevent movement of cargo, and secure loose ends of straps. Tiedowns must be checked during flight and tightened as necessary.

f. Security and safety measures relative to guards, fire, or emergency destruction procedures, as established by pertinent publications (app), will be observed during all phases of air transport. All operations described herein will be in strict compliance with AR 50-103, TM 9-1300-206, TM 9-1100-218-20, and FM 100-50.

g. The high noise level of helicopter engines and helicopter auxiliary power unit can cause permanent damage to hearing. All personnel working in the vicinity will wear hearing protectors and avoid entering engine noise danger area. In addition, external cargo hookup personnel will wear goggles and protective headgear (hard hat, steel helmet, or flight helmet), and will use static electricity discharge probe, NSN 1670-00-574-8044, or a locally fabricated probe.

h. Passenger seats must be available for the minimum essential security personnel (courier officer and guard).

i. Helicopters and universal military pods will be searched and inspected for unauthorized personnel and equipment and any possible sabotage. The search and inspection will be conducted by the surety-qualified helicopter commander during peacetime and by the courier officer during wartime or in an emergency. Entry controls will be established by the courier officer to maintain security integrity until completion of the nuclear mission.

CHAPTER 3

AIR TRANSPORTABILITY AND HANDLING DATA

3-1. General

a. This chapter identifies containers comprising the 8-inch atomic projectile, M422, and the M422 projectile, complete mission load. Also identified are limitations for internal and external transport of the projectile containers by helicopter.

b. Air transport load configurations of the 8-inch atomic projectile, M422, are as follows:

(1) Configuration I—Stockpile storage configuration: four filled containers.

(2) Configuration II—Assembled storage configuration: two filled and two empty or partially empty containers.

NOTE

The 8-inch atomic projectile, M422, in the assembled storage configuration (configuration II), is air transportable only when the conditions described in paragraph 3c, AR 50-103 prevail. If these conditions occur, procedures in this manual will be followed.

c. Personnel dosimetry (film badge) or special radiological handling procedures are not required, unless otherwise specified, for any personnel (including aircrew) engaged in operations described in this manual.

d. Items comprising the load configurations must be inspected for damage other than minor scratches and abrasions. If any item is damaged to such an extent that its contents or functions might be affected, notify the support unit and submit a report in accordance with chapter 5, AR 50-5.

e. Covers/lids on all containers must be secured.

f. When transporting the projectile, all associated containers, empty or otherwise, will accompany the projectile case and the accessory parts case.

g. The helicopter center of balance must be computed for all loads, to include number and location of nuclear-weapon security personnel (two-man concept).

3-2. Container Description

a. Identification, dimensions, and approximate weight of containers comprising the 8-inch atomic projectile, M422, configurations I and II, are shown in figure 3-1 and table 3-1.

b. Identification, dimensions, and approximate weight of containers comprising the M422 projectile, complete mission load, configurations I and II, are shown in table 3-2.

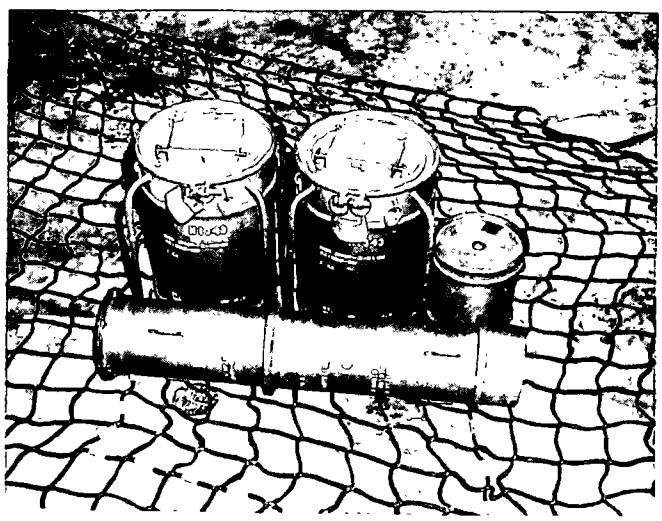


Figure 3-1. Containers comprising the M422 8-inch atomic projectile.

3-3. Air Transport Limitations

a. The 8-inch atomic projectile, M422, will normally be transported as an internal load (chap 4). However, under emergency conditions, the projectile can also be transported as an external load (chap 5). The determination that external transport is justifiable will be approved by the theater commander.

b. The M422 projectile, complete mission load, may be transported as an internal load by a CH-47 helicopter during ACTUAL TACTICAL MISSIONS ONLY. An actual tactical mission involves deployment to the General Defense Position (GDP) upon alert and prior to the outbreak of hostilities or after the outbreak of hostilities. "Going tactical," during training exercises, is not an actual tactical mission.

c. When in the assembled storage configuration, the nose of the M422 projectile must be positioned so that it is pointing to the right, left, or rear of the helicopter or pod. The projectile is packaged in the M500 case with projectile nose at base end of case (opposite the case cover end).

Table 3-1. Description of Containers for 8-Inch Atomic Projectile, M422

Identification	Dimensions				Weight
	Length	Width	Height	Diameter	
Configuration I:					
Projectile, M422, in projectile case, M500	49.5 in. (1.26 m)	.....	.....	11.5 in. (0.29 m)	160 lb ** (73 kg)
Accessory parts case (MS can)	.....	.....	15.0 in. (0.38 m)	12.0 in. (0.30 m)	28 lb (13 kg)
Container, H1343 (TZ)	23.5 in. (0.60 m)	23.5 in. (0.60 m)	26.0 in. (0.66 m)	.....	270 lb (122 kg)
Container, H1343 (PZ and PW)	23.5 in. (0.60 m)	23.5 in. (0.60 m)	26.0 in. (0.66 m)	.....	203 lb (92 kg)
Configuration II:					
Projectile, M422, in projectile case, M500	49.5 in. (1.26 m)	.....	.....	11.5 in. (0.29 m)	300 lb** (136 kg)
Accessory parts case (MS can)	.....	.....	15.0 in. (0.38 m)	12.0 in. (0.30 m)	24 lb (11 kg)
Container, H1343 (TZ)	23.5 in. (0.60 m)	23.5 in. (0.60 m)	26.0 in. (0.66 m)	.....	(*)
Container, H1343 (PZ and PW)	23.5 in. (0.60 m)	23.5 in. (0.60 m)	26.0 in. (0.66 m)	.....	(*)

*Empty weight is marked on item.
**Add 27 lbs (12 kg) when component is installed per TM 9-1110-218-14.

Table 3-2. Description of Containers for M422 Projectile, Complete Mission Load

Identification	Dimensions				Weight
	Length	Width	Height	Diameter	
Configuration I: Containers are the same as shown in Table 3-1.					
Configuration II: Containers are the same as shown in Table 3-1.					
Two M424 spotting rounds in wooden boxes	43.0 in. (ea) (1.09 m)	15.0 in. (ea) (0.38 m)	19.5 in. (ea) (0.50 m)	.....	640 lb (320 lb ea) (290 kg) (145 kg ea)
Three M80 propelling charges in M19A2 containers	29.3 in. (ea) (0.74 m)	.....	.....	9.8 in. (ea) (0.25 m)	252 lb (84 lb ea) (114 kg) (38 kg ea)
Three M188 propelling charges in PA66 containers	38.0 in. (ea) 0.97 m)	.....	.....	10.5 in. (ea) (0.27 m)	225 lb (75 lb ea) (102 kg) (34 kg ea)

3-4. Logistical Transport

a. The following items may be transported, as mixed or unmixed loads, without spacing restrictions:

(1) Projectile, M422, in case, M500, when in the stockpile storage configuration (configuration I).

(2) Container, H1343.

(3) Accessory parts case (MS can).

b. The maximum number of these items that can be transported is limited only by the number of tiedowns available. Chapter 6 contains suggested maximum loads.

CHAPTER 4

INTERNAL TRANSPORT BY HELICOPTER

WARNING

Insure that the universal military pod is secured to the CH-54 helicopter to preclude jettisoning the pod either deliberately or inadvertently.

WARNING

When in the assembled storage configuration, the projectile, M422, in projectile case, M500, must be separated a minimum of 3 feet (0.9 meter) (center-to-center spacing) from any other nuclear weapon or nuclear component.

WARNING

The container, H1343, must stand on base for storage and shipment. Porthole on top of the container must not be covered.

4-1. Materials and Procedures for Transport of 8-Inch Atomic Projectile, M422

a. Parking Shoring. One piece of plywood, 10- by 48- by 1-inch, or equivalent, beneath projectile case, M500; one piece of plywood, 16- by 16- by ¼-inch, or equivalent, beneath accessory parts case; two pieces of plywood, 16- by 16- by 1-inch, or equivalent, beneath H1343 containers.

b. Loading.

(1) Hand-carry containers (figure 3-1 and table 3-1) into helicopter or universal military pod, and position at tiedown location. Center projectile case, M500, and containers on shoring. Four persons can prepare, load, and tie down the four containers in about 20 minutes.

(2) Tie down the containers in accordance with the following figures and tables:

Helicopters	*Figure No.*	*Table No.*
CH-47	4-1	4-1
UH-1H	4-2	4-2
UH-60	4-3, 4-4, 4-5	4-3
CH-54	4-6	4-4

c. Unloading. Four persons can unload the four containers in about 10 minutes.

4-2. Materials and Procedures for Transport of M422 Projectile Complete Mission Load, in CH-47 Helicopter.

NOTE

The M422 and XM753 atomic projectiles, and items comprising their respective complete mission loads, may be transported as a mixed load by Army helicopters. FM 55-220 prescribes procedures for transport of the XM753 projectile by Army helicopters, and for transport of the XM753 projectile complete mission loads by CH-47 helicopter.

NOTE

The M422 projectile, complete mission load, may be transported by helicopter during ACTUAL TACTICAL MISSIONS ONLY, as described in paragraph 3-3*b*, Chapter 3.

NOTE

Where 1-inch-thick plywood is required, any combination of pieces may be nailed together to attain thickness of at least 1 inch.

a. Parking Shoring.

(1) Two pieces, 2- by 6- by 36-inch, for use beneath skids of combined spotting projectile boxes (two boxes).

(2) Two pieces, 2- by 6- by 36-inch, for use beneath stacked propelling charge containers (six containers).

(3) One piece plywood, 1- by 5-foot by 1-inch, for use beneath case, M500.

(4) Three pieces plywood, 2- by 2-foot by 1-inch, for use beneath containers, H1343, and accessory parts case (MS can).

b. Blocking Shoring.

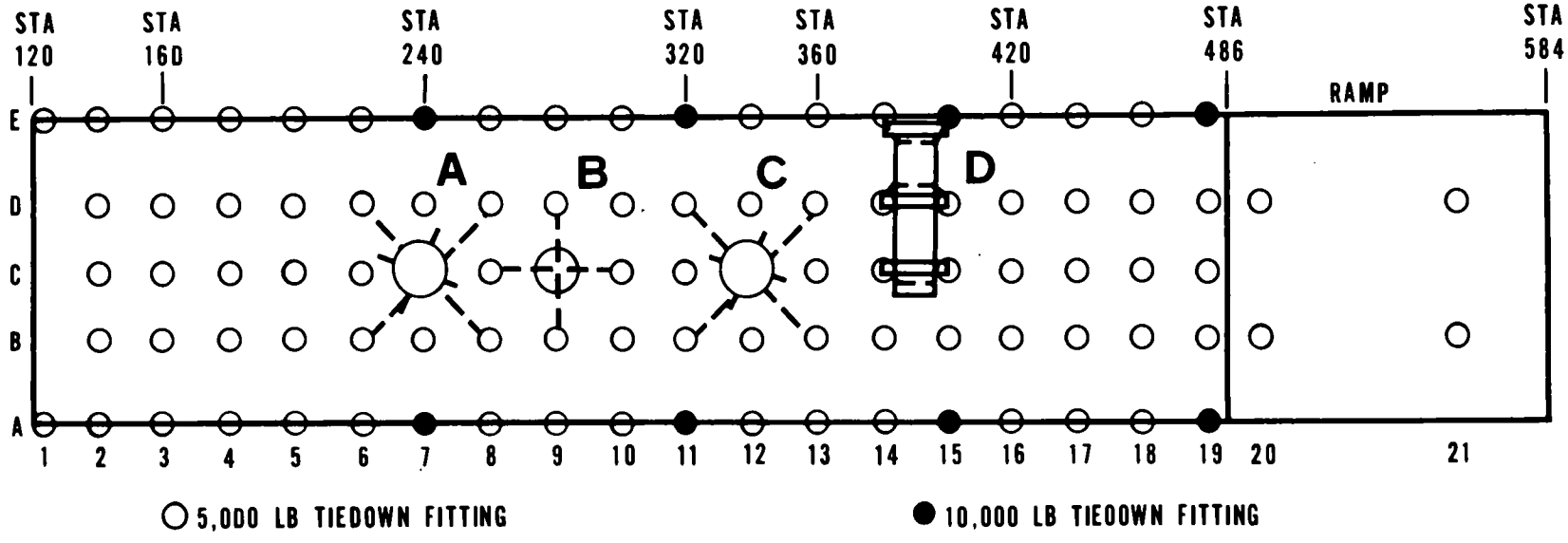
(1) Two pieces, 2- by 4- by 28-inch, nailed to ends of 36-inch parking shoring to provide end blocking for stacked propelling charge containers (six containers) (fig 4-7).

(2) One piece plywood, 1- by 20- by 30-inch (notched at center on 20-inch sides to accommodate tiedown device strap), for use as lateral blocking on outboard side of stacked propelling charge containers (six containers).

(3) One piece plywood, 1- by 10- by 33-inch (notched at center on 10-inch sides to accommodate tiedown strap), for use as lateral blocking on inboard side of PA66 containers (three containers).

(4) One piece plywood, 1- by 10- by 21-inch (notched at center on 10-inch sides to accommodate tiedown strap), for use as lateral blocking on inboard side of M19A2 containers (three containers).

(5) Eight nails, 8d (2½-inch). Use two nails at each joint to secure end blocks to shoring for stacked pro-

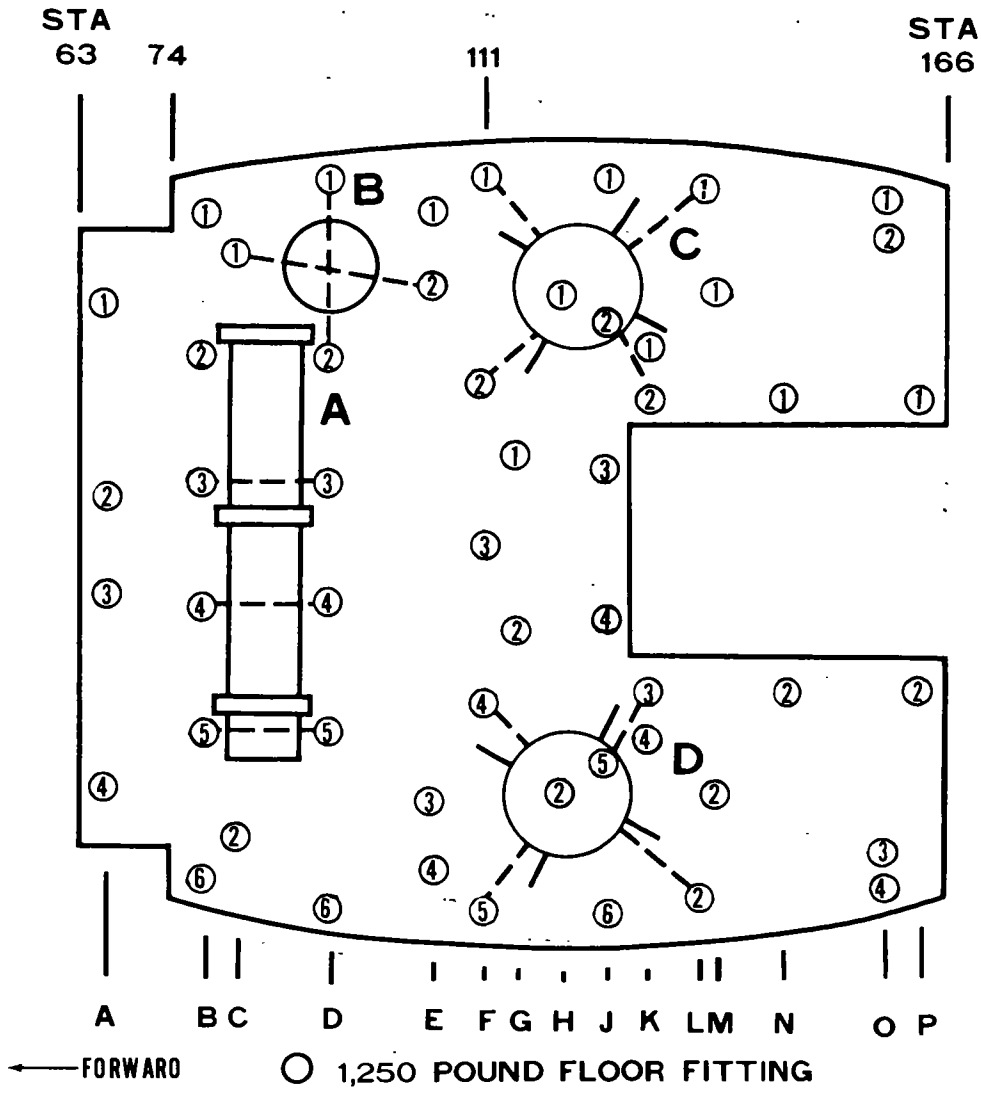


NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG (STA)	APPROX. WT (LB)
			REFERENCE POINT	STATION		
A	CONTAINER, H1343 (TZ)	UPRIGHT	FORWARD EDGE	228	239	270
B	ACCESSORY PARTS CASE (MS CAN)	UPRIGHT	FORWARD EDGE	284	278	28
C	CONTAINER, H1343 (PZ AND PW)	UPRIGHT	FORWARD EDGE	330	337	203
D	PROJECTILE, M422, IN CASE, M500	TOP RIGHT	FORWARD EDGE	380	390	160*

*ADD 27 LBS (12 kg) WHEN COMPONENT IS INSTALLED PER TM 9-1110-218-14

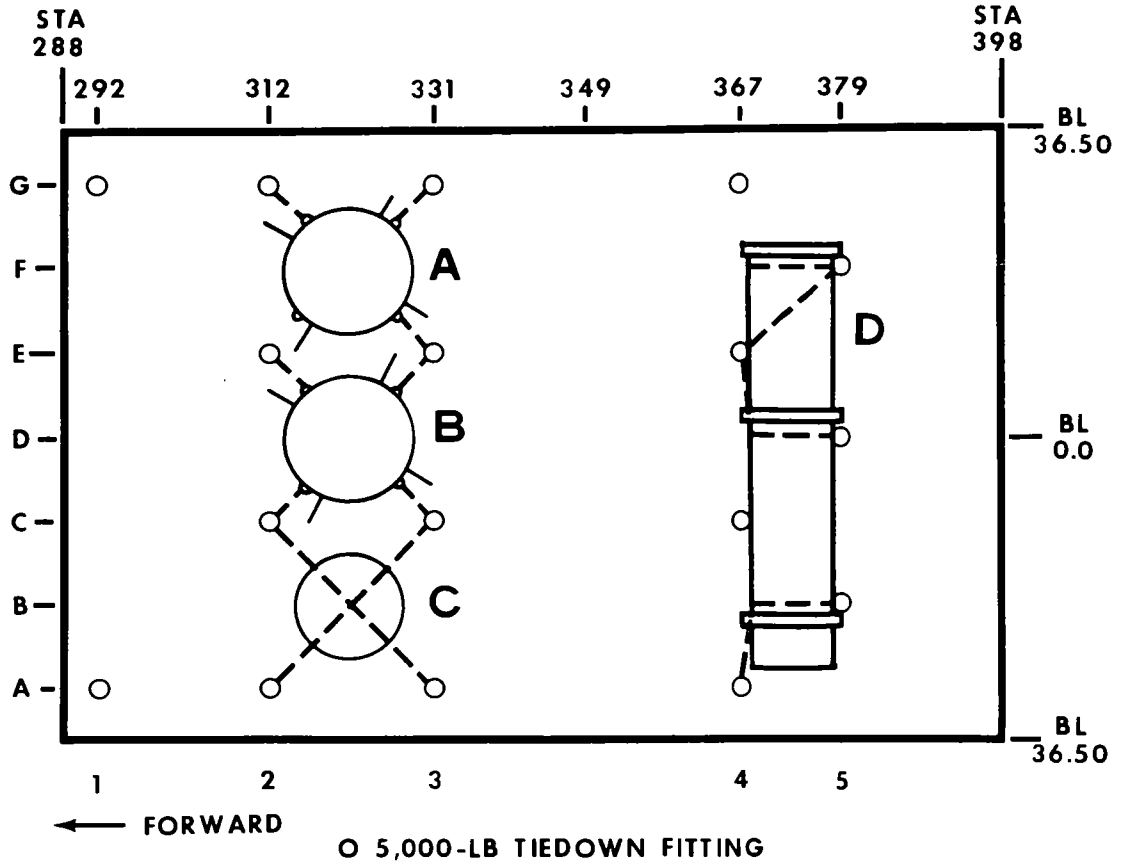
Figure 4-1. Tiedown diagram for 8-inch atomic projectile, M422, in CH-47 helicopter.



ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG (STA)	APPROX WT (LB)
			REFERENCE POINT	STATION		
A	PROJECTILE, M422, IN PROJECTILE CASE, M500	TOP RIGHT	FORWARD EDGE	80	86	160*
B	ACCESSORY PARTS CASE (MS CAN)	UPRIGHT	FORWARD EDGE	87	93	28
C	CONTAINER, H1343 (TZ)	UPRIGHT	FORWARD EDGE	115	122	270
D	CONTAINER, H1343 (PZ AND PW)	UPRIGHT	FORWARD EDGE	115	122	203

*ADD 27 LBS (12 kg) WHEN COMPONENT IS INSTALLED PER TM 9-1110-218-14

Figure 4-2. Tiedown diagram for 8-inch atomic projectile, M422, in UH-1H helicopter.



NOTE: CARGO HOOK ACCESS DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 343 AND 363

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG (STA)	APPROX WT (LB)
			REFERENCE POINT	STATION		
A	CONTAINER, H1343 (TZ)	UPRIGHT	FORWARD EDGE	314	322	270
B	CONTAINER, H1343 (PZ AND PW)	UPRIGHT	FORWARD EDGE	314	322	203
C	ACCESSORY PARTS CASE	UPRIGHT	FORWARD EDGE	315	322	28
	(MS CAN)					
D	PROJECTILE, M422, IN CASE,	TOP RIGHT	FORWARD EDGE	367	373	160*
	M500					

*ADD 27 LBS (12 kg) WHEN COMPONENT IS INSTALLED PER TM 9-1110-218-14

Figure 4-3. Tiedown diagram for 8-inch atomic projectile, M422, in UH-60 helicopter.

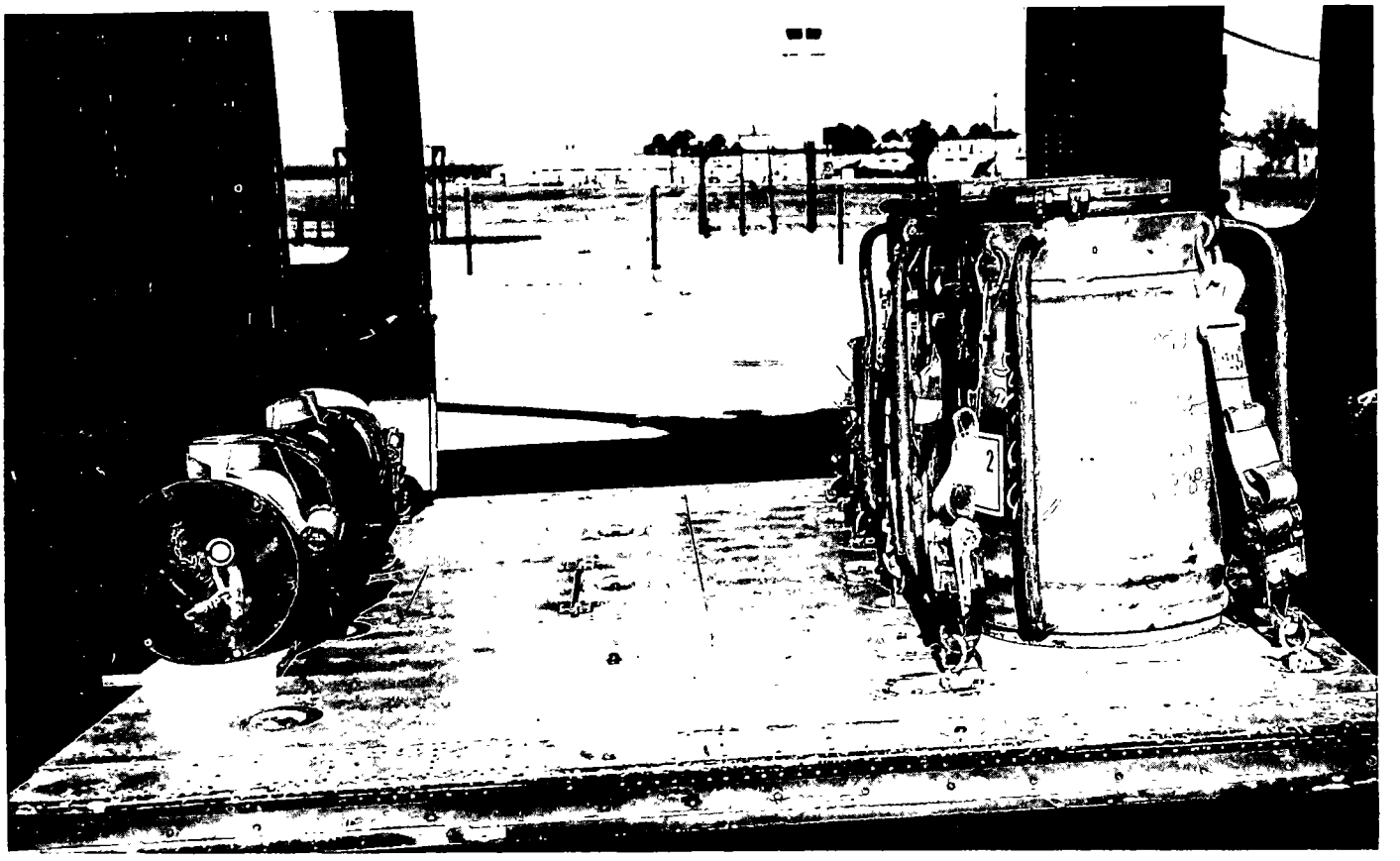


Figure 4-4. M422 8-inch atomic projectile (M500 case, H1343 containers, and MS can) tied down in UH-60 helicopter. (MS can is hidden from view by the H1343 containers.)

pelling charge containers. Construct shoring (outside helicopter) for containers (fig 4-7).

c. Tiedowns. Twenty-one CGU-1/B tiedown devices (four on combined spotting projectile boxes (two boxes); five on stack of propelling charge containers (six containers); two on MS can; two on case, M500; and four on each container, H1343 (two containers).

d. Loading.

(1) Position parking shoring at tiedown location (fig 4-8) for spotting round projectile boxes (two boxes), and hand-carry boxes to tiedown location.

(2) Position parking shoring (fig 4-7) at tiedown location for propelling charge containers, and place three PA66 containers on shoring (fig 4-9).

(3) Position (pyramid) three M19A2 containers on top of PA66 containers so that outboard edges of all six containers are flush (fig 4-9).

(4) Position parking shoring at tiedown location for case, M500, and place case on shoring (fig 4-10).

(5) Position parking shoring at tiedown location for accessory parts case (MS can), and place can on shoring (fig 4-11).

(6) Position parking shoring at tiedown locations for two containers, H1343, and place containers on shoring (fig 4-12).

(7) Tie down the M422 projectile, complete mission load, in accordance with figures 4-8, 4-9, 4-10, 4-11, 4-12, and 4-13 and table 4-5.

e. Time required. Four persons can prepare, load, and tie down the M422 projectile, complete mission load, in about 60 minutes.

f. Unloading. Procedures for unloading are essentially the reverse of procedures for loading. Four persons can unload the M422 projectile, complete mission load, in about 15 minutes.

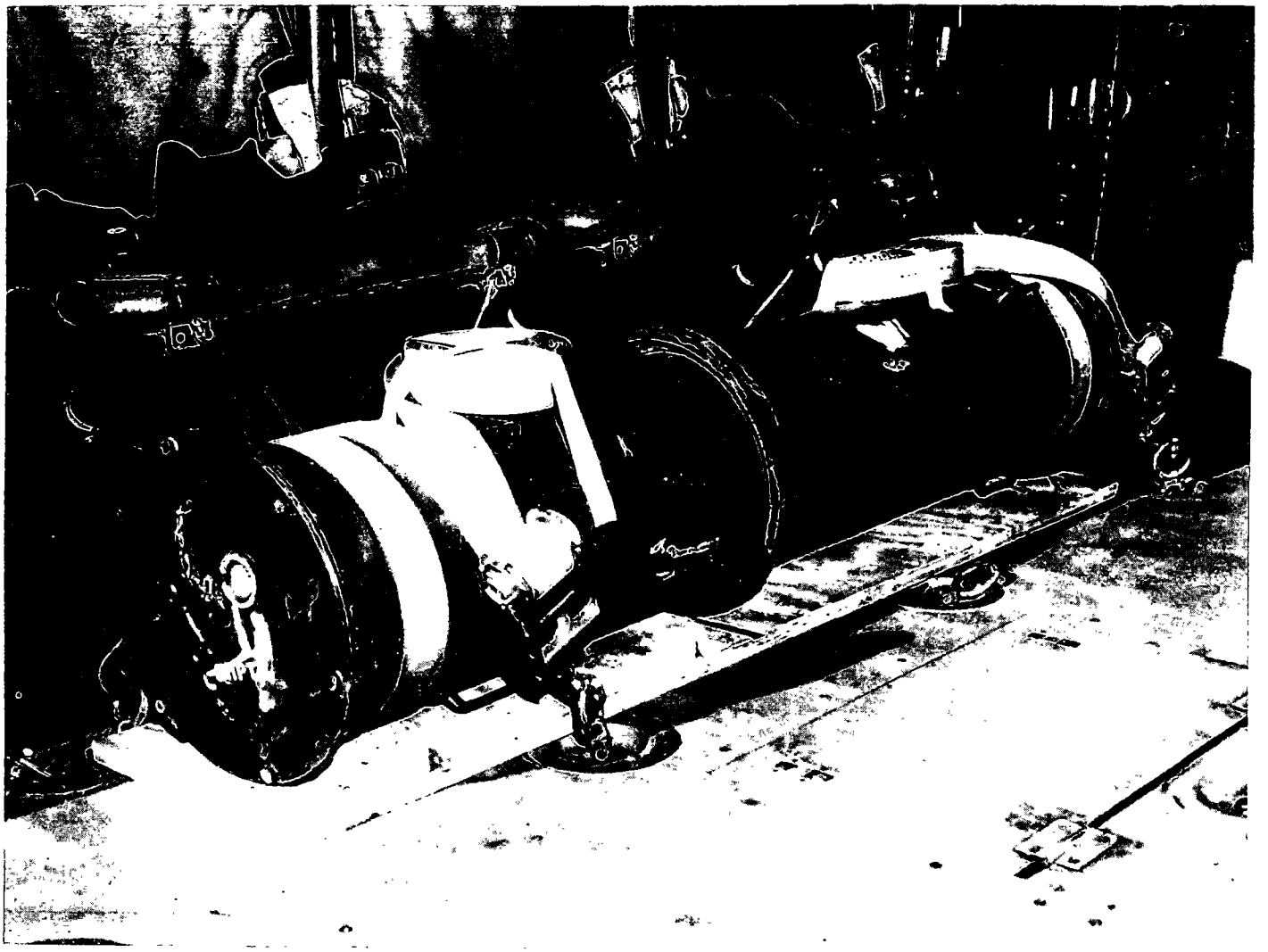
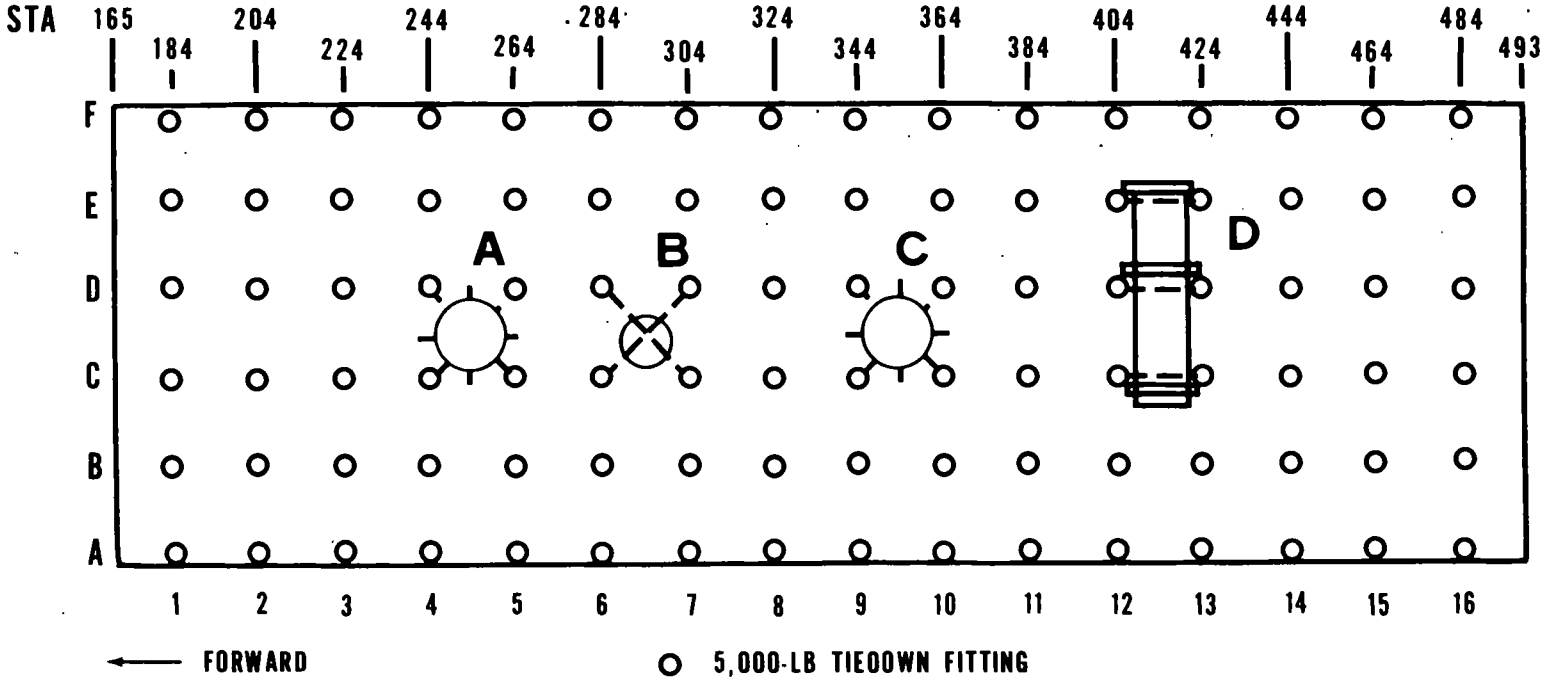


Figure 4-5. M500 case with M422 projectile tied down in UH-60 helicopter.

Table 4-1. Tiedown Data for 8-Inch Atomic Projectile, M422, in CH-47 Helicopter

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	B6	5	CGU-1/B	5	Left front tiedown ring.
	D6	5	CGU-1/B	5	Right front tiedown ring.
	B8	5	CGU-1/B	5	Left rear tiedown ring.
	D8	5	CGU-1/B	5	Right rear tiedown ring.
B	C8/C10	5	CGU-1/B	5	Over top of case.
	B9/D9	5	CGU-1/B	5	Over top of case.
C	B11	5	CGU-1/B	5	Left front tiedown ring.
	D11	5	CGU-1/B	5	Right front tiedown ring.
	B13	5	CGU-1/B	5	Left rear tiedown ring.
	D13	5	CGU-1/B	5	Right rear tiedown ring.
D	C14/C15	5	CGU-1/B	5	Over case below bottom ring roll.
	D14/D15	5	CGU-1/B	5	Over case above center ring roll.
	E14/E15*	5/10	CGU-1/B	5	Over case below top ring roll.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG (STA)	APPROX. WT (LB)
			REFERENCE POINT	STATION		
A	CONTAINER, H1343 (TZ)	UPRIGHT	FORWARD EDGE	242	250	270
B	ACCESSORY PARTS CASE (MS CAN)	UPRIGHT	FORWARD EDGE	288	294	28
C	CONTAINER, H1343 (PZ AND PW)	UPRIGHT	FORWARD EDGE	342	350	203
D	PROJECTILE, M422, IN CASE, M500	TOP RIGHT	FORWARD EDGE	404	424	160*

*ADD 27 LBS (12 kg) WHEN COMPONENT IS INSTALLED PER TM 9-1110-218-14

Figure 4-6. Tiedown diagram for 8-inch atomic projectile, M422, in CH-54 helicopter universal military pod.

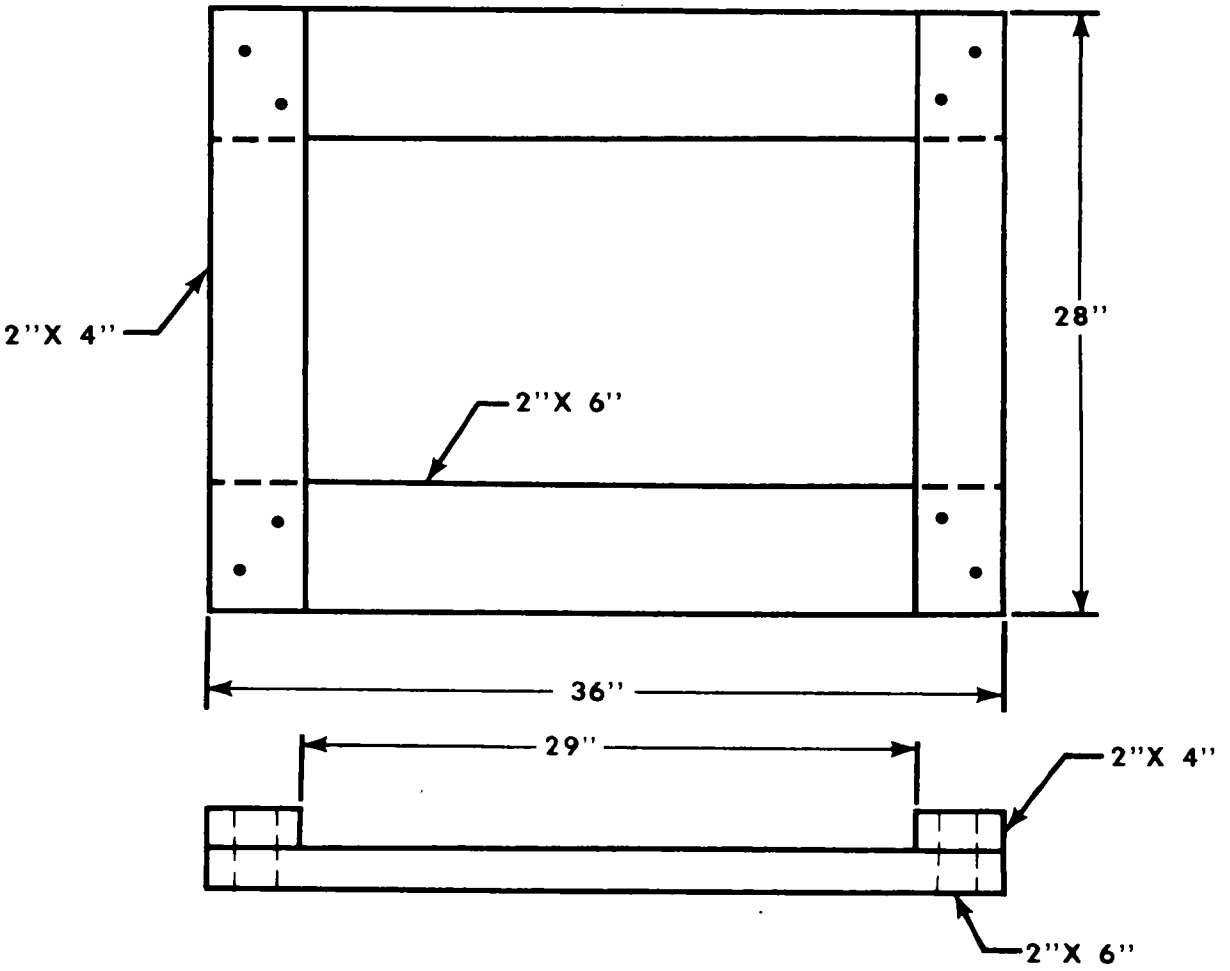


Figure 4-7. Shoring for stacked propelling charge containers for M422 projectile, complete mission load.

Table 4-2. Tiedown Data for 8-Inch Atomic Projectile, M422, in UH-1H Helicopters

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	B3/D3	1.25	CGU-1/B	5	Over case above center ring roll.
	B4/D4*	1.25	CGU-1/B	5	Over case.
	B5/D5	1.25	CGU-1/B	5	Over case below bottom ring roll.
B	C1/E2	1.25	CGU-1/B	5	Over top of case.
	D1/D2	1.25	CGU-1/B	5	Over top of case.
C	F1	1.25	CGU-1/B	5	Right front tiedown ring.
	F2	1.25	CGU-1/B	5	Left front tiedown ring.
	K2	1.25	CGU-1/B	5	Left rear tiedown ring.
	L1	1.25	CGU-1/B	5	Right rear tiedown ring.
D	F4	1.25	CGU-1/B	5	Right front tiedown ring.
	F5	1.25	CGU-1/B	5	Left front tiedown ring.
	K3	1.25	CGU-1/B	5	Right rear tiedown ring.
	L2	1.25	CGU-1/B	5	Left rear tiedown ring.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

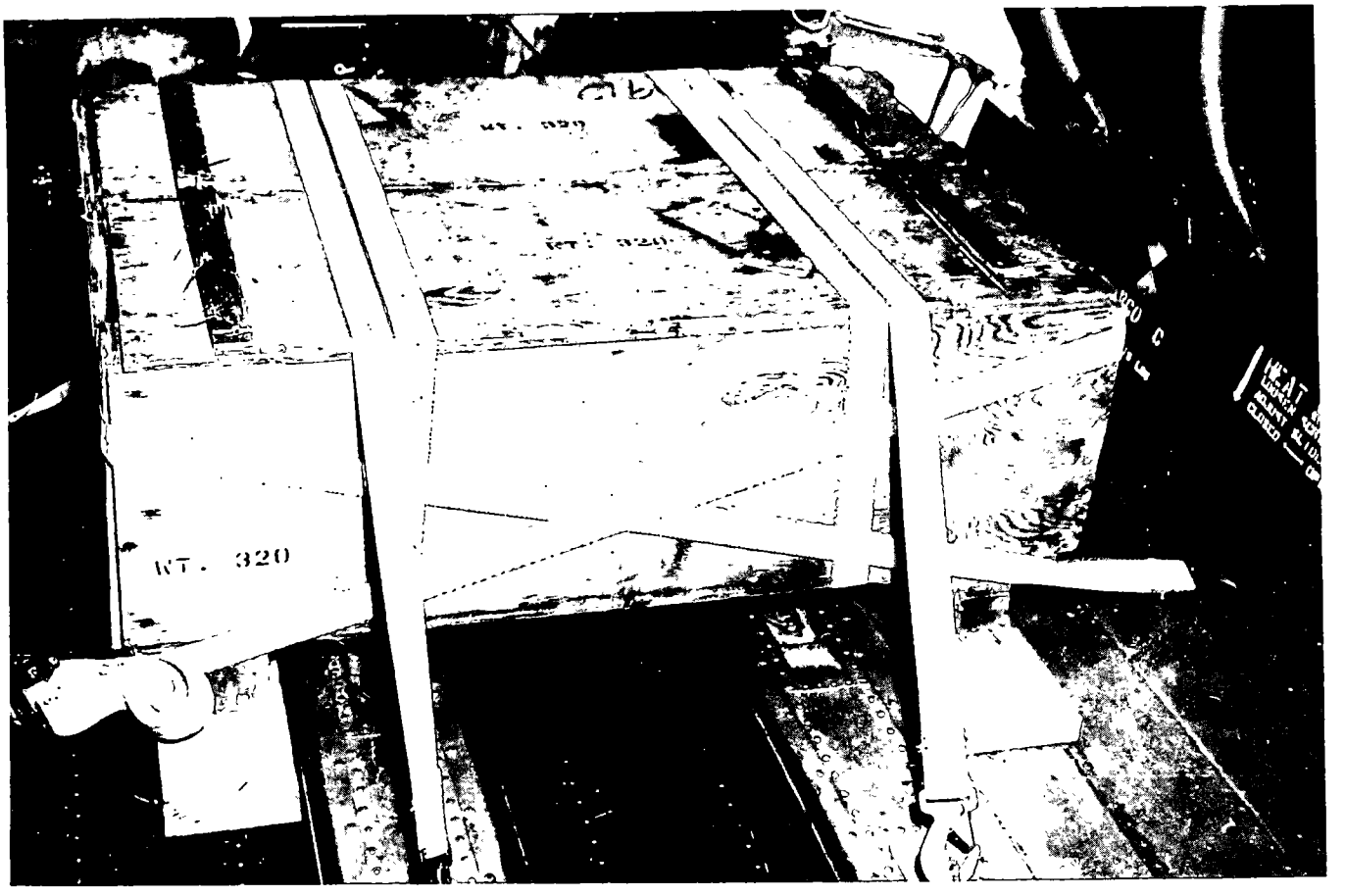


Figure 4-8. Spotting round projectiles (two boxes) positioned on shoring and tied down in CH-47 helicopter. Note that forward and aft restraint straps are inside box skids.

Table 4-3. Tiedown Data for 8-Inch Atomic Projectile, M422, in UH-60A Helicopter

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	E2	5	CGU-1/B	5	Left front tiedown ring.
	G2	5	CGU-1/B	5	Right front tiedown ring.
	E3	5	CGU-1/B	5	Left rear tiedown ring.
	G3	5	CGU-1/B	5	Right rear tiedown ring.
B	C2	5	CGU-1/B	5	Left front tiedown ring.
	E2	5	CGU-1/B	5	Right front tiedown ring.
	C3	5	CGU-1/B	5	Left rear tiedown ring.
	E3	5	CGU-1/B	5	Right rear tiedown ring.
C	A2/C3	5	CGU-1/B	5	Over top of container.
	A3/C2	5	CGU-1/B	5	Over top of container.
D	A4/B5	5	CGU-1/B	5	One complete loop around case above bottom ring roll.
	D5/E4*	5	CGU-1/B	5	One complete loop around case below center ring roll.
	E4/F5	5	CGU-1/B	5	One complete loop around case below top ring roll.

*Additional tiedown device required when Projectile, M422, is in the assembled storage configuration.

Figure 4-9. Propelling charge containers (six containers) positioned on shoring and tied down in CH-47 helicopter. Three PA66 containers are at bottom and three M19A2 containers are on top.

Table 4-4. Tiedown Data for 8-Inch Atomic Projectile M422 in CH-54 Helicopter Universal Military Pad

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	D4	5	CGU-1/B	5	Right front tiedown ring.
	C4	5	CGU-1/B	5	Left front tiedown ring.
	D5	5	CGU-1/B	5	Right rear tiedown ring.
	C5	5	CGU-1/B	5	Left rear tiedown ring.
B	C6/D7	5	CGU-1/B	5	Over top of case.
	C7/D6	5	CGU-1/B	5	Over top of case.
C	D9	5	CGU-1/B	5	Right front tiedown ring.
	C9	5	CGU-1/B	5	Left front tiedown ring.
	D10	5	CGU-1/B	5	Right rear tiedown ring.
	C10	5	CGU-1/B	5	Left rear tiedown ring.
D	C12/C13	5	CGU-1/B	5	Over case above bottom ring roll.
	D12/D13*	5	CGU-1/B	5	Over case below center ring roll.
	E12/E13	5	CGU-1/B	5	Over case below top ring roll.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

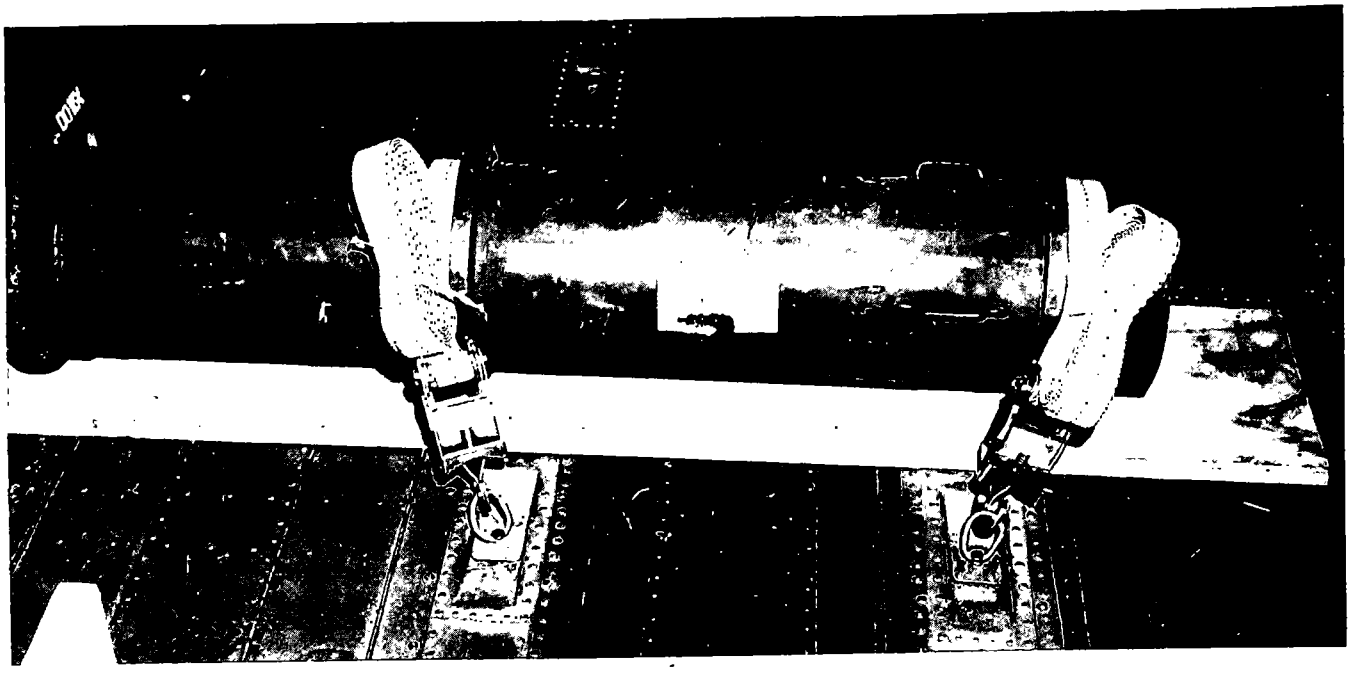


Figure 4-10. Case, M500, positioned on shoring and tied down in CH-47 helicopter. View looking aft in helicopter.

Table 4-5. Tiedown Data for M422 Projectile, Complete Mission Load, in CH-47 Helicopter

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	C3/C6	5	CGU-1/B	5	Over and around both boxes, inside skids.
	D3/D6	5	CGU-1/B	5	Over and around both boxes, inside skids.
	B4/B5	5	CGU-1/B	5	Looop around outboard ends of both boxes.
	E4/E5	5	CGU-1/B	5	Loop around inboard ends of both boxes.
B	C7/C9	5	CGU-1/B	5	Over top of propelling charges.
	D7/D9	5	CGU-1/B	5	Over top of propelling charges.
	D7/D9	5	CGU-1/B	5	Around plywood at inboard ends of upper rows of propelling charges.
	C7/C9	5	CGU-1/B	5	Around plywood at inboard ends of bottom row of propelling charges.
	B7/B9	5	CGU-1/B	5	Around plywood at outboard ends of all propelling charges.
C	C10/C11	5	CGU-1/B	5	Over case, M500, below bottom ring roll.
	D10/D11	5	CGU-1/B	5	Over case, M500, above center ring roll.
	E10/E11*	5/10	CGU-1/B	5	Over case, M500, below top ring roll.
D	A14/C14	5	CGU-1/B	5	Over top of MS can.
	B13/B15	5	CGU-1/B	5	Over top of MS can.
E	D13	5	CGU-1/B	5	Left front tiedown ring.
	E13	5	CGU-1/B	5	Right front tiedown ring.
	D15	5	CGU-1/B	5	Left rear tiedown ring.
	E15	10	CGU-1/B	5	Right rear tiedown ring.
F	A15	10	CGU-1/B	5	Left front tiedown ring.
	C15	5	CGU-1/B	5	Right front tiedown ring.
	A17	5	CGU-1/B	5	Left rear tiedown ring.
	C17	5	CGU-1/B	5	Right rear tiedown ring.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

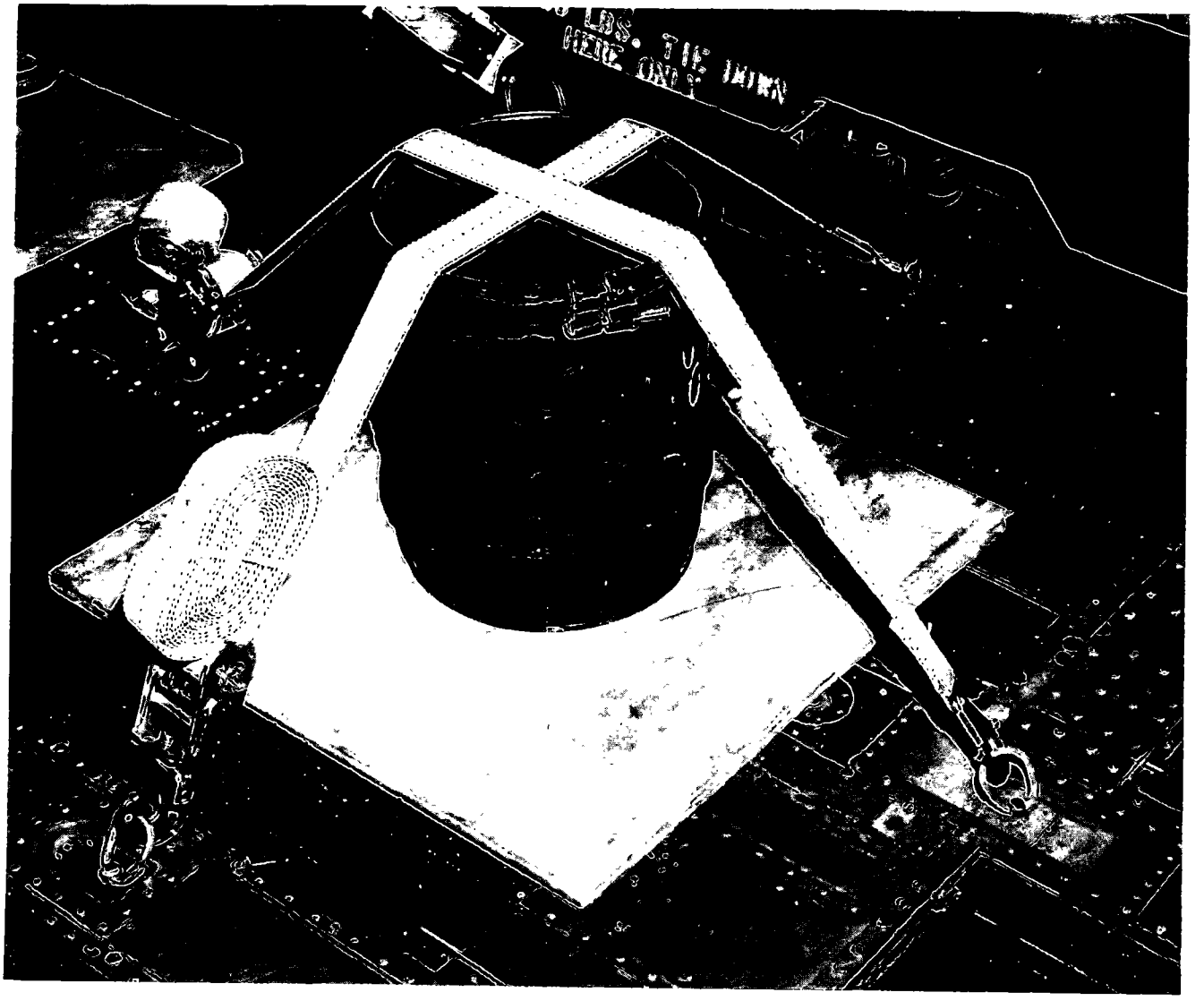


Figure 4-11. Accessory parts case (MS can) positioned on shoring and tied down in CH-47 helicopter.

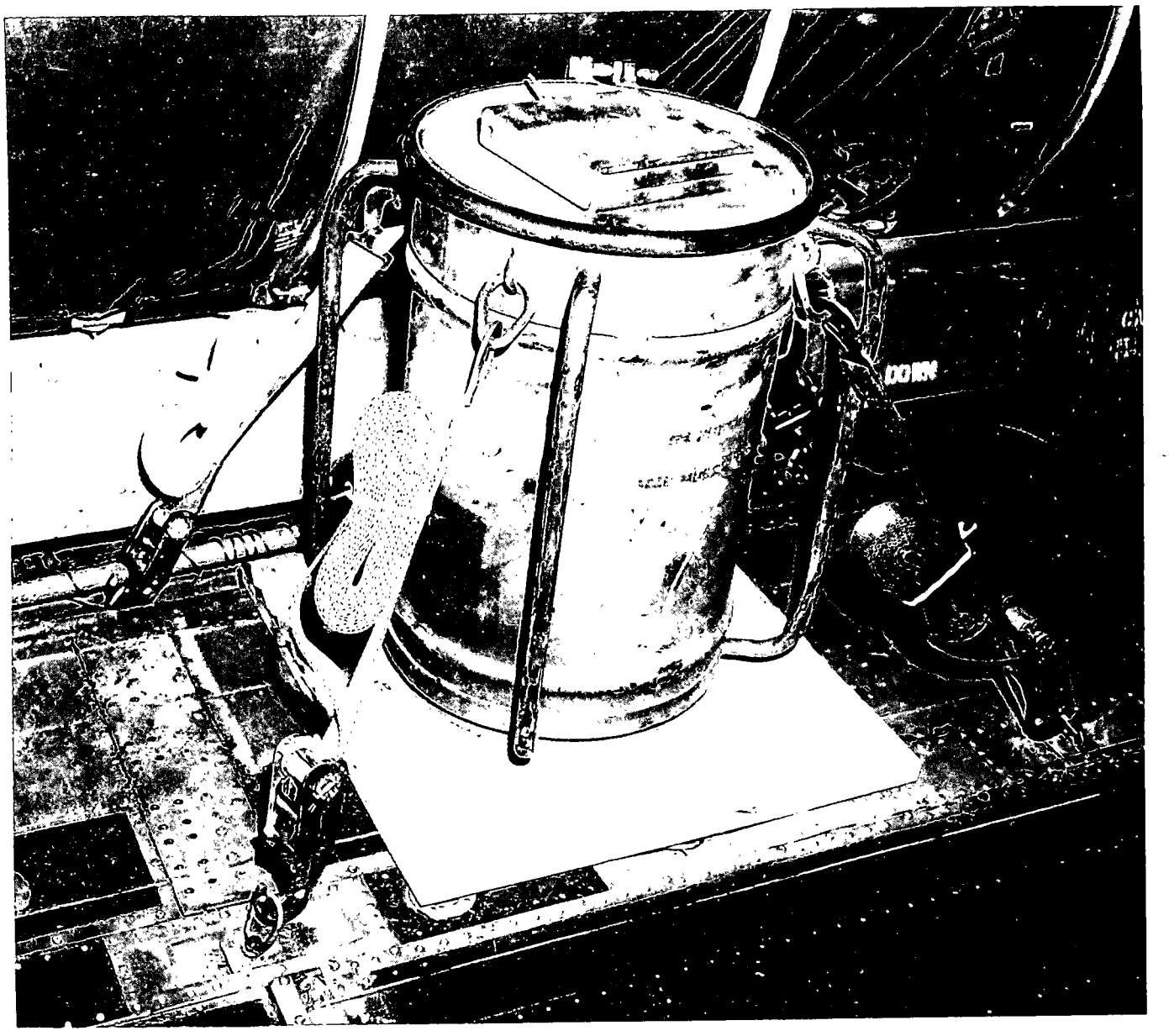
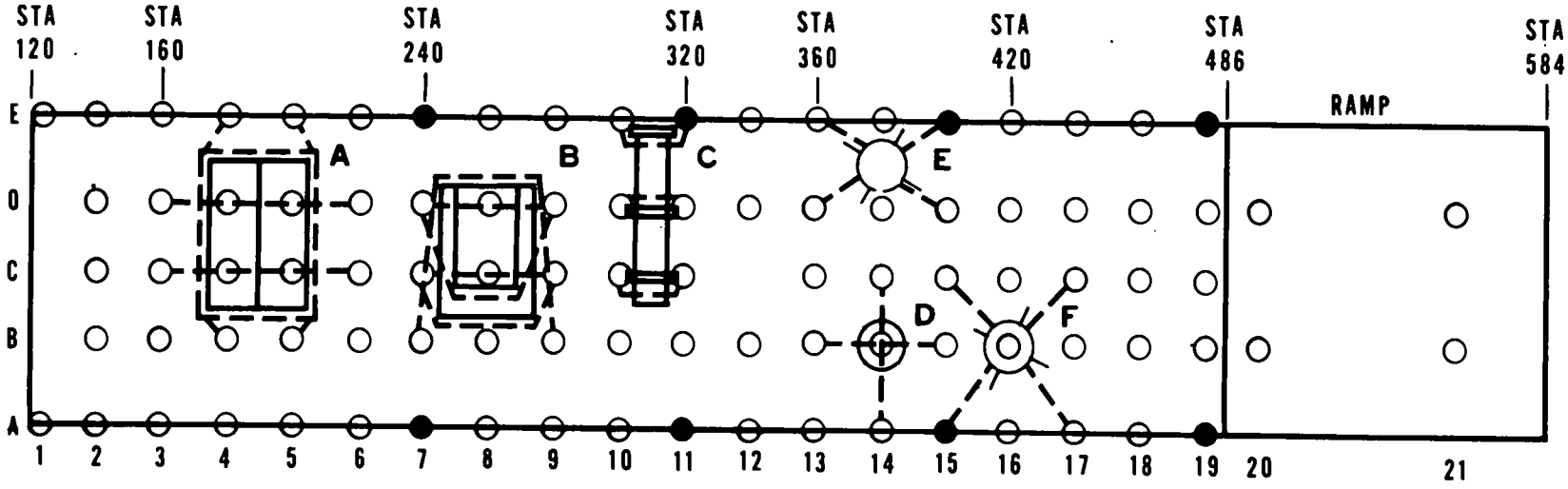


Figure 4-12. Container, H1343, positioned on shoring and tied down in CH-47 helicopter. The second container, H1343, is on left side of helicopter.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG (STA)	APPRDX. WT (LB)
			REFERENCE POINT	STATION		
A	TWO M424 SPOTTING PROJECTILES	LATERAL	FORWARD EDGE	175	190	320
B	THREE M188 PROPELLING CHARGES IN PA66 CONTAINERS AND THREE M80 PROPELLING CHARGES IN M19A2 CONTAINERS	LATERAL	FORWARD EDGE	245	260	477
C	PROJECTILE, M422, IN CASE, M500	TOP RIGHT	FORWARD EDGE	304	310	160*
D	ACCESSORY-PARTS CASE (MS CAN)	UPRIGHT	FORWARD EDGE	374	380	28
E	CONTAINER, H1343 (PZ AND PW)	UPRIGHT	FORWARD EDGE	372	380	203
F	CONTAINER, H1343 (TZ)	UPRIGHT	FORWARD EDGE	412	420	270

*ADD 27 LBS (12 kg) WHEN COMPONENT IS INSTALLED PER TM 9-1110-218-14

Figure 4-13. Tiedown diagram for M422 projectile, complete mission load, in CH-47 helicopter.

CHAPTER 5

EXTERNAL TRANSPORT BY HELICOPTER (EMERGENCY PROCEDURE)

5-1. General

This chapter prescribes procedures for external transport of the 8-inch atomic projectile, M422 (stockpile storage configuration only), in cargo nets and cargo bag. Containers comprising the projectile load are shown in figure 3-1 and table 3-1.

WARNING

The contents of chapter 5 are for information and training purposes only and are not to be construed as authority for external transport by helicopter of the 8-inch atomic projectile, M422. Only dummy loads may be used for practice and/or training exercises. *Nuclear weapons will not be moved by external helicopter transport except in emergency conditions (such as emergency evacuation ordered to maintain US custody or to prevent loss because of fire or flood) and only when the situation does not allow time to prepare and move the nuclear weapons by internal transport (chap 4).*

WARNING

The container, H1343, must stand on base for storage and shipment.

WARNING

Always assume that a charge of static electricity is present on the helicopter. It is necessary to use some type of discharge apparatus (static probe) (Fig. 2-3, FM 55-413) to ground the hook and discharge electricity to prevent shock when the hook is touched. After discharge of electricity, the hook is grasped quickly and firmly and held, if possible, until the hookup is completed. If contact with the hook is lost after initial grounding, the hook must be grounded again before it is touched. Do not use the load as a ground contact. After air delivery and before handling, ground the load again to discharge any accumulated/retained static electricity.

CAUTION

When performing external air transport by CH-54 helicopter, use a large metal clevis to attach the load to the cargo hook as a nylon sling ring will tend to adhere to the cargo hook beam and prevent release of the load.

5-2. Materials and Procedures for Transport of One or Two 8-Inch Atomic Projectiles, M422, Using the 5,000-Pound-Capacity Nylon Cargo Net

a. Materials.

(1) Net, cargo, nylon, 5,000-pound-capacity (NSN 1670-01-058-3811).

(2) Cord, nylon, 1/16-inch nominal diameter 330-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

(3) Tape, adhesive, 2-inch wide (NSN 7510-00-266-5016), or equivalent.

(4) Wadding, cellulose (NSN 8135-00-573-6790), or equivalent.

b. Preparation and Rigging.

(1) Use wadding to pad both ends of projectile case, M500; secure wadding with tape.

(2) Spread cargo net and position containers in center of net (fig. 5-1 and 5-2).

(3) When transporting two projectiles, the locking bolts on top rings of the containers, H1343, must be faced inward to prevent fouling the net. The center ring roll on the case, M500, must be positioned between the handles of the containers, H1343 (fig. 5-2).

(4) Draw the cargo net up around the loads (figs 5-3 and 5-4), and secure the four corner hooks in net apex stirrup.

(5) Lace nylon cord through the cargo net above the load.

(6) Attach cargo net apex stirrup to the helicopter cargo hook. Helicopter must be centered over load before tension is placed on the net.

(7) For external transport, four persons can rig the single load in approximately 5 minutes or the double load in approximately 10 minutes.

c. *Derigging.* Four persons can derig either the single load or the double load in approximately 3 minutes.

5-3. Materials and Procedures for Transport of One or Two 8-Inch Atomic Projectiles, M422, Using the 10,000-Pound-Capacity Nylon Cargo Net

a. Materials.

(1) One net, cargo, nylon, 10,000-pound capacity (NSN 1670-01-058-3810) (for use in combination with slings described below in (2), or (4), or (5), or (6)).

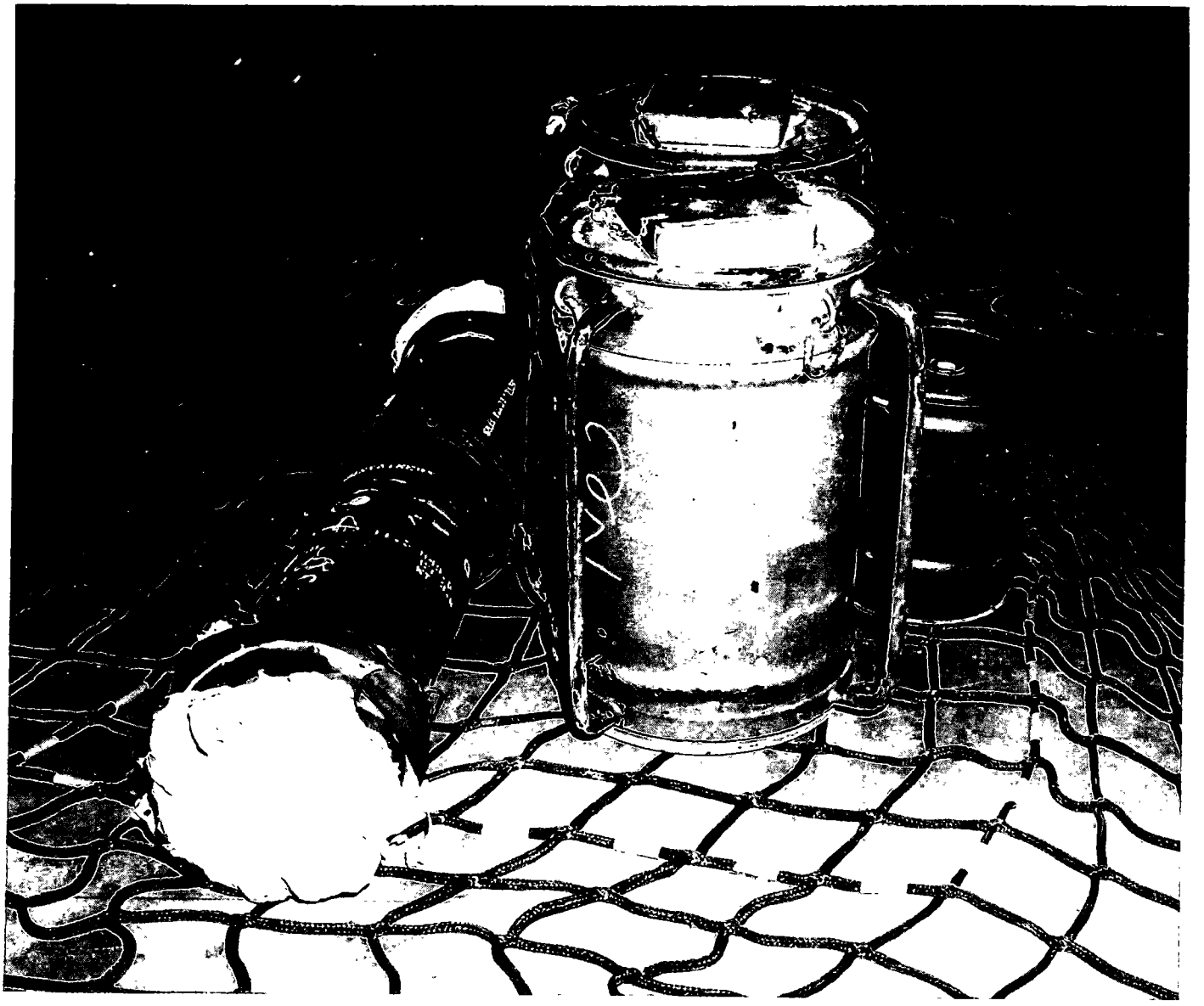


Figure 5-1. Containers for one 8-inch atomic projectile, M422, in 5,000-pound-capacity nylon cargo net. Note padding on projectile case, M500.

(2) Two 16-foot, two-loop, cargo slings (NSN 1670-00-753-3793) (each has rated capacity of 6,500 pounds).

(3) One 3-foot, three-loop, air delivery cargo sling ring (NSN 1670-00-753-3788) (has rated capacity of 10,000 pounds) with link assembly, type IV (NSN 1670-00-783-5988).

(4) One 23-foot, nylon and chain, four-leg sling (NSN 1670-00-902-3080) (has rated capacity of 15,000 pounds).

(5) One sling, helicopter, cargo carrying external, four-leg sling (NSN 1670-01-027-2902) (has rated capacity of 10,000 pounds).

(6) One sling, helicopter, cargo carrying external, four-leg sling (NSN 1670-01-027-2900) (has rated capacity of 25,000 pounds).

(7) Cord, nylon $\frac{1}{16}$-inch nominal diameter, 330-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

(8) Tape, adhesive, 2-inch wide (NSN 7510-00-266-5016), or equivalent.

(9) Wadding, cellulose (NSN 8135-00-573-6790), or equivalent.

(10) One large clevis assembly, air delivery, type I (NSN 1670-00-090-5354) (for use when attaching items described above in (2) and (3); or in (4) to the CH-54 helicopter cargo hook).

b. Preparation and Rigging When Using Two 16-Foot, Two-Loop, Cargo Slings to Rig Nylon Cargo Net.

(1) Observe procedures in 5-2*b*(1) through 5-2*b*(3).

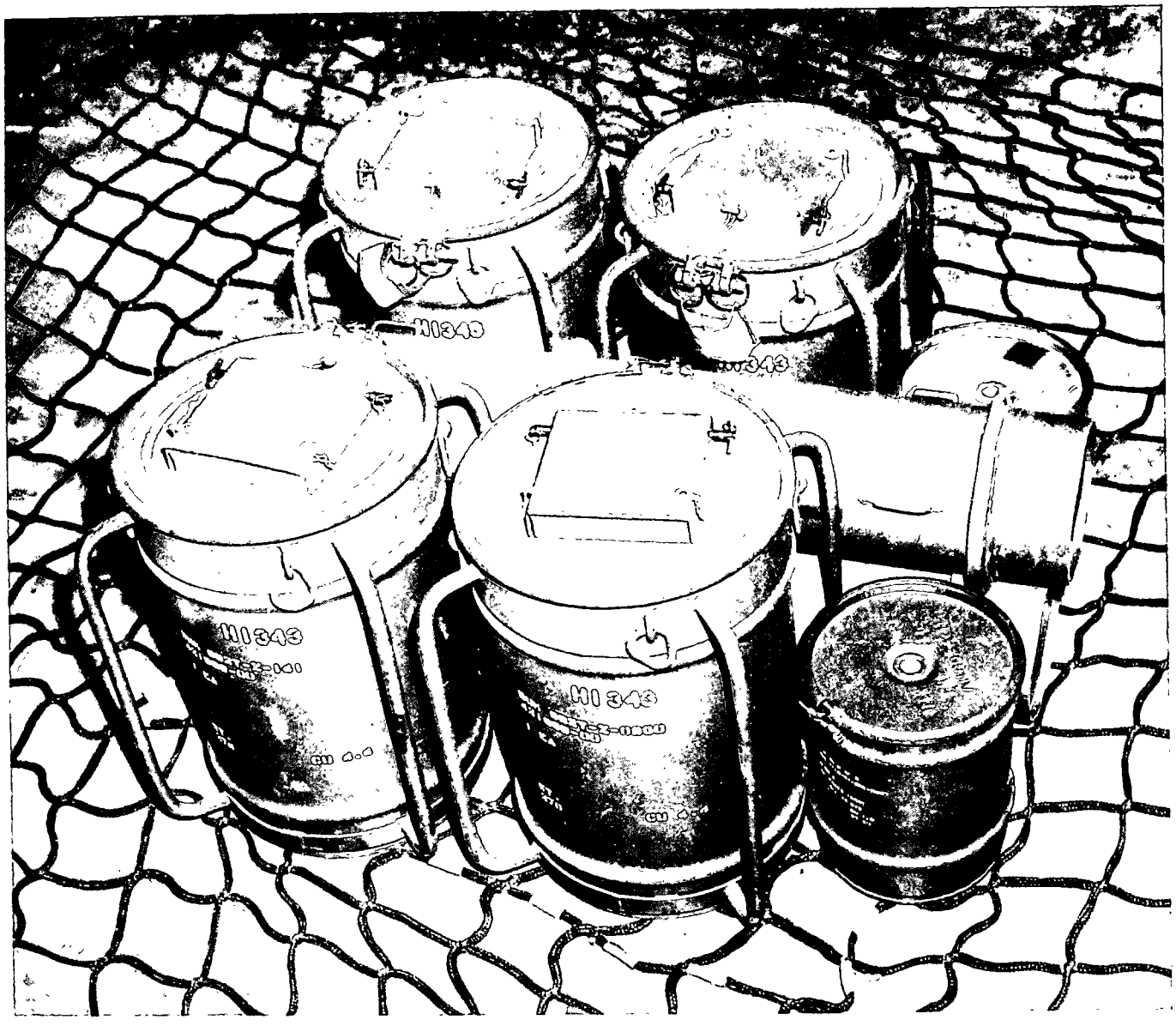


Figure 5-2. Containers for two 8-inch atomic projectiles, M422, in 5,000-pound-capacity nylon cargo net. Padding not yet applied to projectile cases, M500.

(2) Pass the first cargo sling end through two adjoining hoist links on cargo net. Pass the second cargo sling end through the other two hoist links on cargo net.

(3) Combine the four ends of the cargo slings to form a single loop, and attach loop to the 3-foot sling. Connect free ends of the 3-foot sling with the link assembly. The 3-foot sling forms the apex for attachment to the helicopter (UH-1H, CH-47, and UH-60) cargo hook. Use a large clevis to attach the 3-foot sling to the CH-54 helicopter cargo hook.

(4) Lace nylon cord through the cargo net above the load.

(5) Cluster and tape or tie sling legs (breakaway technique) to prevent fouling during lift off.

(6) Attach apex to the helicopter cargo hook. Helicopter must be centered over load before tension is placed on the net.

c. Preparation and Rigging When Using the 23-Foot, Nylon and Chain, Four-Leg Sling; or the Sling, Helicopter, Cargo Carrying External, Four-Leg Sling (Either the 10,000- or 25,000-Pound Capacity Sling), to Rig Nylon Cargo Net.

NOTE

Each leg of the nylon and chain, four-leg sling is constructed of a 15-foot nylon web sling with a metal grab link on its lower end. The

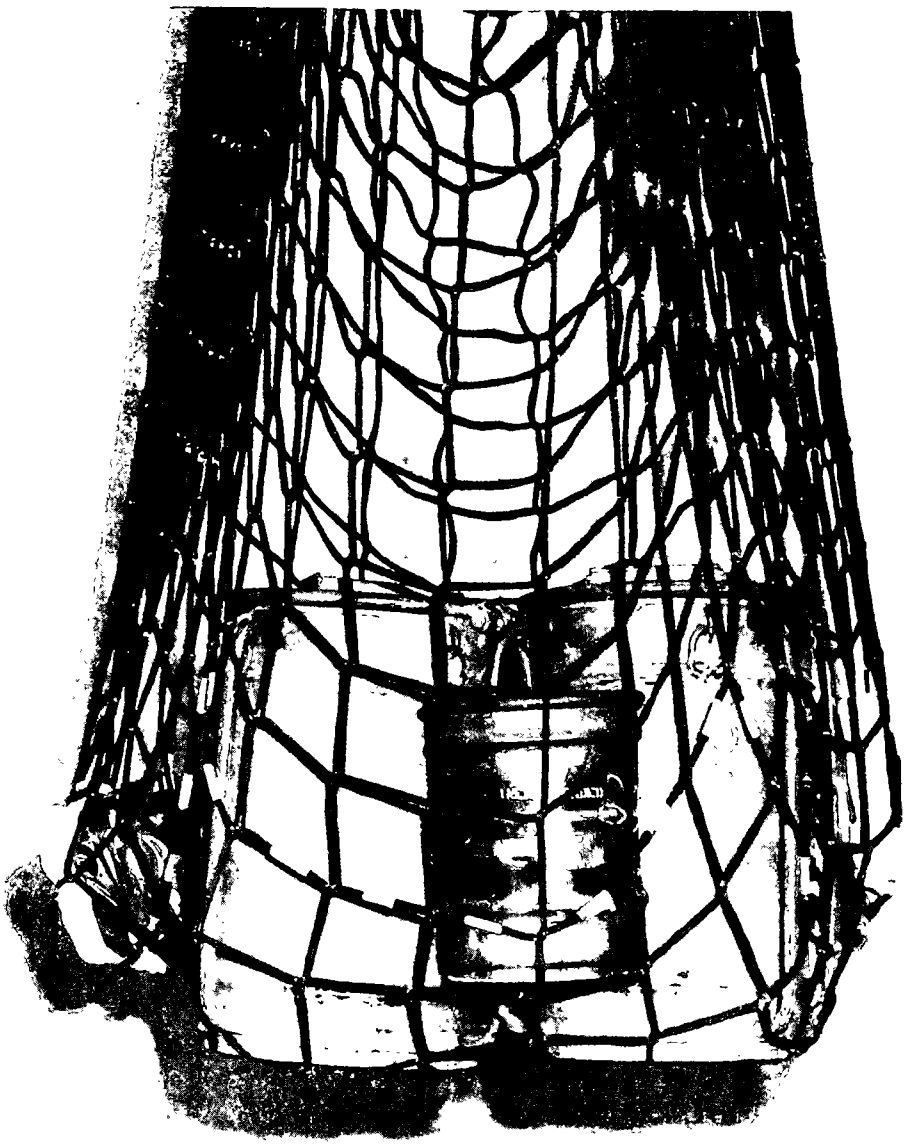


Figure 5-3. Test lift of containers for one 8-inch atomic projectile, M422, in 5,000-pound-capacity nylon cargo net.

grab link is approximately 10 inches long and is equipped with a spring-loaded keeper. Attached to the lower or small end of the grab link is a hammer lock, which connects the chain leg to the grab link. The chain leg is approximately 6 feet long and has 64 links. The link at the free end is referred to as link number 1.

NOTE

Each leg of the sling, helicopter, cargo carrying external, four-leg sling, either 10,000-pound or 25,000-pound capacity, is constructed of a 12-foot nylon-coated braided nylon rope and an 8-foot chain. The rope and chain are connected by a grab hook that is equipped with a spring loaded keeper. The chain leg of the 10,000-pound capacity sling consists of approximately 111 links. The chain leg of the 25,000-pound-capacity sling consists of approximately 88 links. On each sling, the link at the free end of the chain is referred to as link number 1.

(1) Observe procedures in 5-2*b*(1) through 5-2*b*(3).

(2) Pass each of the sling chain legs through a single hoist link on cargo net, then insert link number 3 of each chain into the grab link or hook to form hitch.

(3) The 12-inch ring of the nylon and chain, four-leg sling forms the apex for attachment to the helicopter (UH-1H, CH-47, and UH-60) cargo hook. Use a

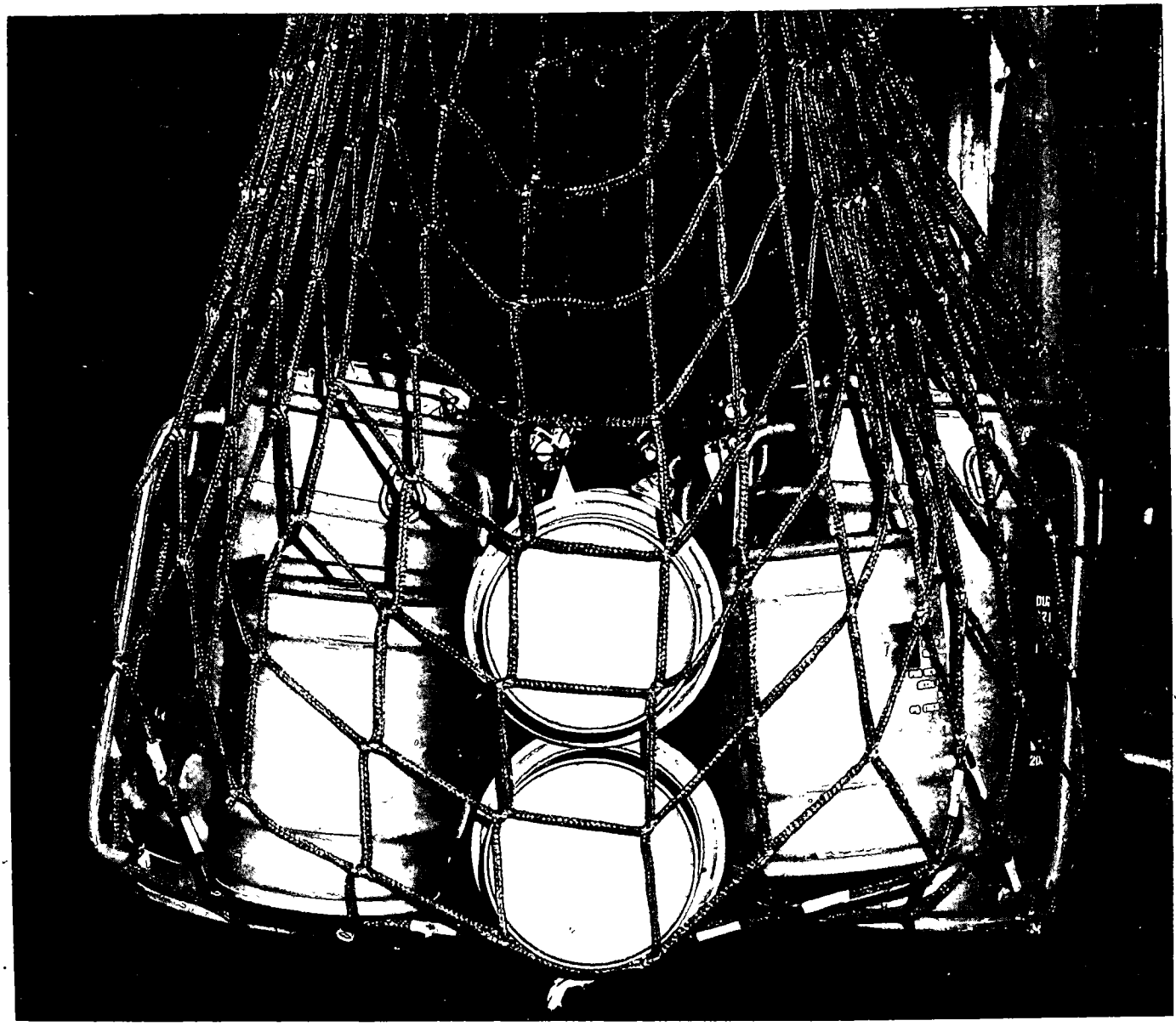


Figure 5-4. Test lift of containers for two 8-inch atomic projectiles, M422, in 5,000-pound-capacity nylon cargo net.

large clevis to attach the 12-inch ring to the CH-54 helicopter cargo hook.

(4) The metal clevis of the sling, helicopter, cargo carrying external, four-leg sling forms the apex for attachment to cargo hooks on UH-1H, CH-47, UH-60, and CH-54 helicopters.

(5) Observe procedures in *b*(4) through *b*(6) above.

d. Time Required. Four persons can rig the single load in approximately 10 minutes, or the double load in approximately 15 minutes, when using any of the described slings.

e. Derigging. Four persons can derig either the single load or the double load in approximately 5 minutes.

5-4. Materials and Procedures for Transport of One or Two 8-Inch Atomic Projectiles, M422, Using the Bag, Cargo, Aerial Delivery

a. Materials.

(1) Bag, cargo, aerial delivery, type A22, 2,200-pound-capacity (NSN 1670-00-242-9169) (for use in combination with slings described below in (2); or in (4); or in (5); or in (6)).

(2) One 8-foot, two-loop, cargo sling (NSN 1670-00-753-3789) (has rated capacity of 6,500 pounds).

(3) One 3-foot, three-loop, air delivery cargo sling ring (NSN 1670-00-753-3788) (has rated capacity of

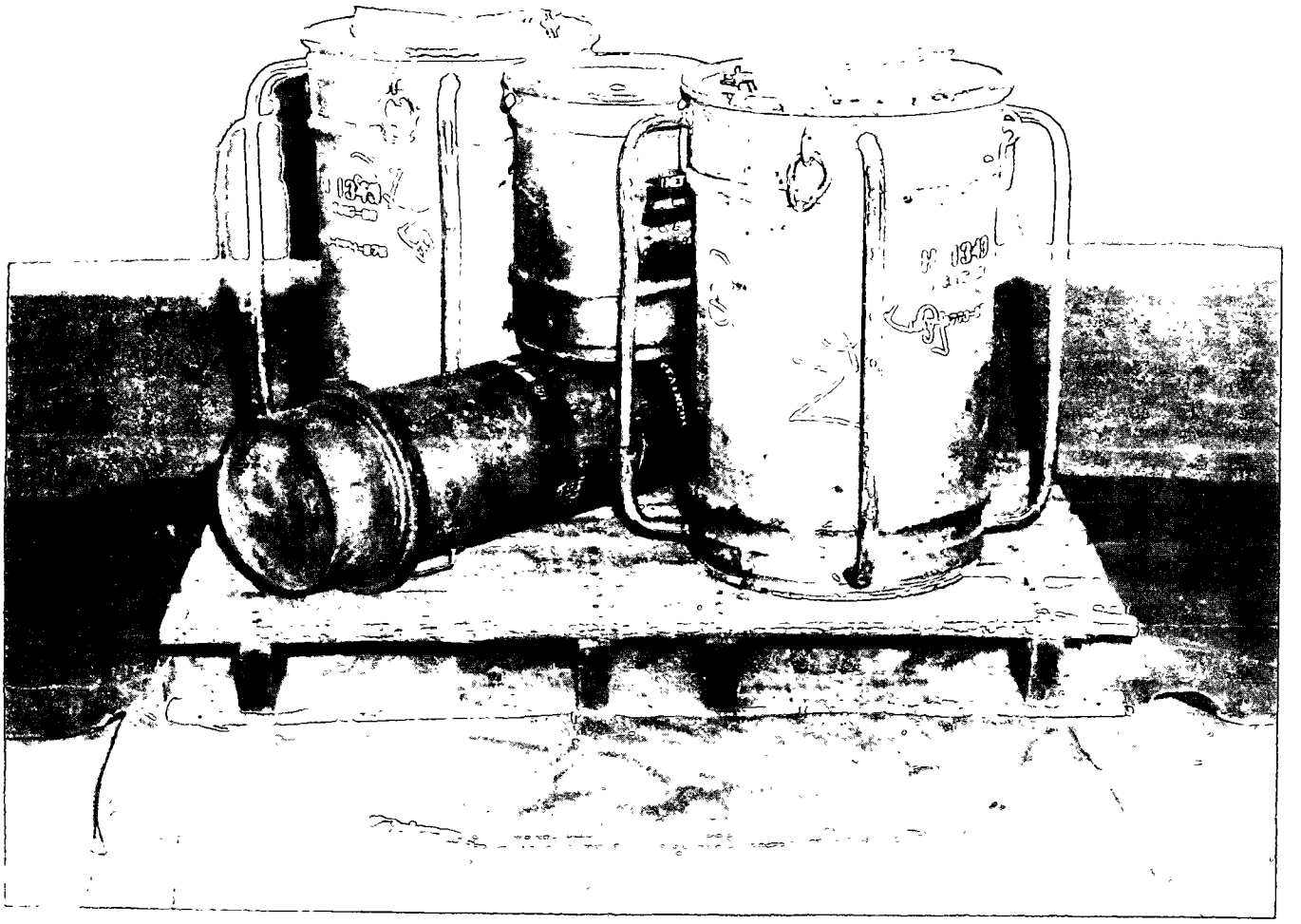


Figure 5-5. Containers for one 8-inch atomic projectile, M422, palletized in center of cargo bag.

10,000 pounds), with link assembly, type IV (NSN 1670-00-783-5988).

(4) One 23-foot, nylon and chain, four-leg sling (NSN 1670-00-902-3080) (has rated capacity of 15,000 pounds).

(5) One sling, helicopter, cargo carrying external, four-leg sling (NSN 1670-01-027-2902) (has rated capacity of 10,000 pounds).

(6) One sling, helicopter, cargo carrying external, four-leg sling (NSN 1670-01-027-2900) (has rated capacity of 25,000 pounds).

(7) Cord, nylon 1/16-inch nominal diameter, 330-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

(8) Tape, adhesive, 2-inch wide (NSN 7510-00-226-5016), or equivalent.

(9) One medium clevis assembly, air delivery (NSN 1670-00-678-8562).

(10) One large clevis assembly, air delivery, type I (NSN 1670-00-090-5354) (for use when attaching items described above in (2) and (3); or in (4) to the CH-54 helicopter cargo hook).

(11) One standard wood pallet, 40- by 48-inch or one piece of plywood, 48- by 36- by 3/4-inch.

b. Preparation and Rigging When Using the 8-Foot, Two-Loop, Cargo Sling to Rig Cargo Bag. Preparation and rigging procedures for the cargo bag are described in detail in chapter 11, TM 55-450-19.

(1) Center cargo bag cover, outside down, on sling assembly with long panel of cover over long axis of sling assembly.

(2) When transporting one projectile, place pallet or plywood in center of cover and position projectile containers on pallet (fig. 5-5).

(3) When transporting two projectiles, position projectile containers in center of cover (fig. 5-6). The center ring roll on the case, M500, must be positioned between the handles of the containers, H1343.

(4) Fold panels of cover over top of projectile containers (fig. 5-7).

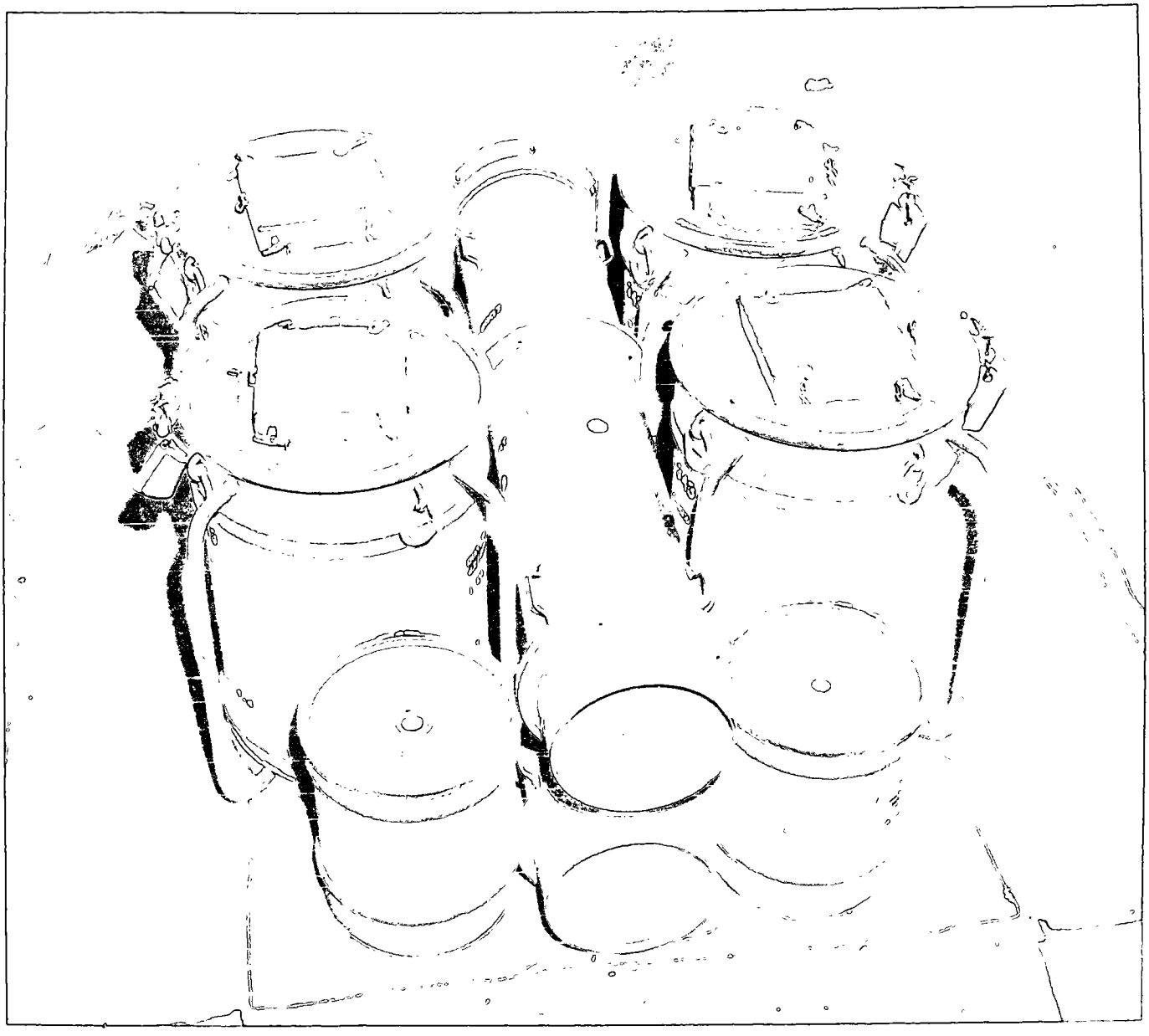


Figure 5-6. Containers for two 8-inch atomic projectiles, M422, centered in cargo bag.

(5) Secure cover at each corner, using cord through lacing loops. If original lacing cord is not available, use nylon cord.

(6) Pass the free end of each tiedown strap over top of load and across a strap fastener on opposite end of strap. Fasten and tighten straps; fold and tape or tie excess strapping (fig. 5-8).

(7) Fasten lateral straps together around corners of load by attaching free ends of straps to strap fasteners (fig. 5-9). If load is of sufficient height, all lateral straps will fasten around the load but for a lower load, the upper lateral straps are fastened diagonally across top corners of the load.

(8) Connect the four snap fasteners of suspension webs of D-rings on support webs of sling assembly, insuring that the open side of the snaps face inward.

(9) Adjust all straps until sling assembly fits snugly around the load. When the upper lateral strap runs across the top of the load, pull the suspension webs to their full height. Then adjust and secure upper lateral strap so that it does not bind the upper part of support web to the load.

(10) Basket-hitch the 8-foot cargo sling to medium clevis assembly, and attach bolt end of clevis assembly to cargo bag suspension web D-rings. Tighten clevis assembly bolt.

(11) Combine free ends of the cargo sling to form a single loop, and attach loop to the 3-foot sling. Connect free ends of the 3-foot sling with the link assembly. The 3-foot sling forms the apex for attachment to

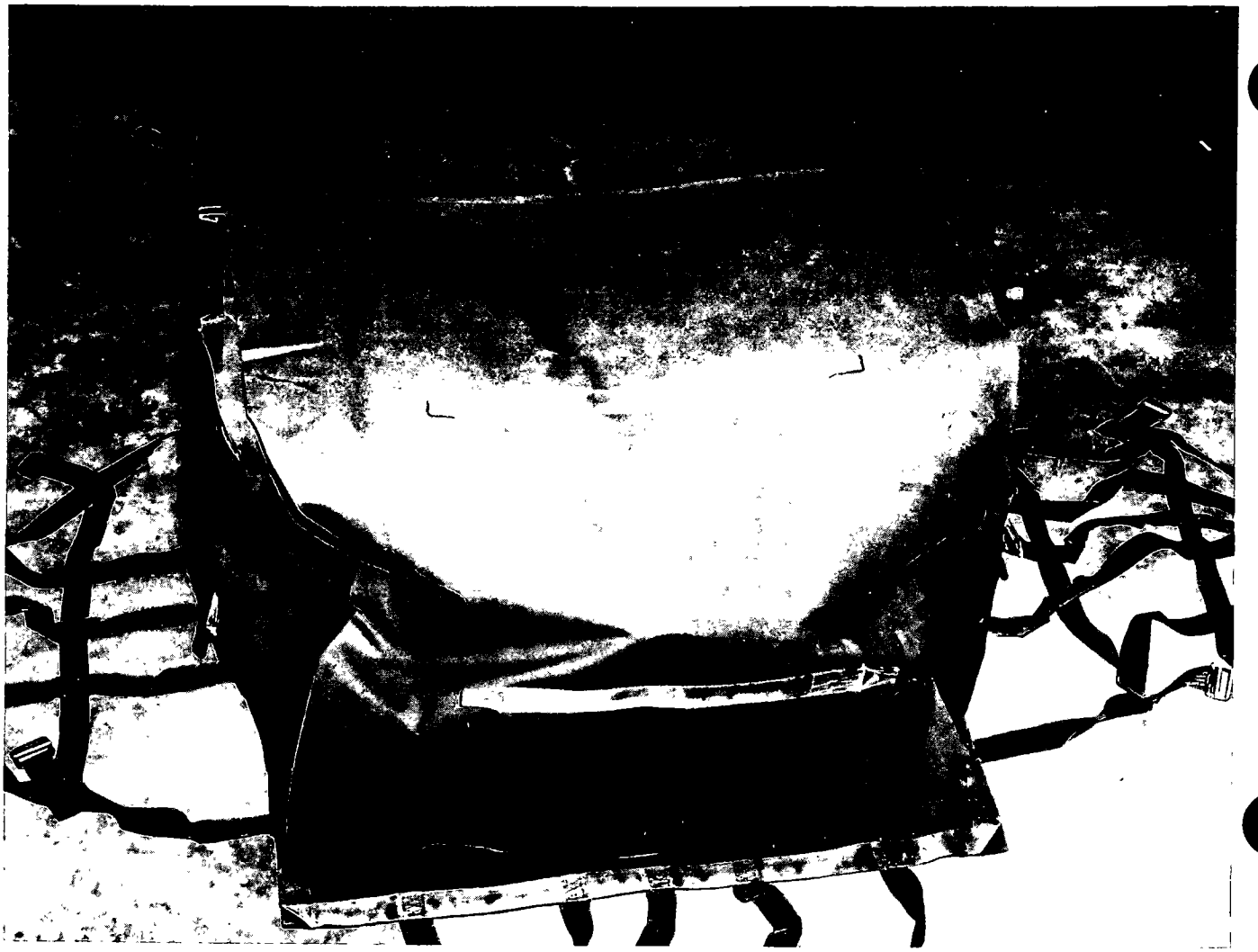


Figure 5-7. Panels of cargo bag folded over top of projectile containers. Note that excess material is folded beneath the top panel.

the helicopter (UH-1H, CH-47, and UH-60) cargo hook. Use a large clevis to attach the 3-foot sling to the CH-54 helicopter cargo hook.

c. Preparation and Rigging When Using the 23-Foot, Nylon and Chain, Four-leg Sling; or the Sling Helicopter, Cargo Carrying External, Four-leg Sling (Either the 10,000- or 25,000-Pound Capacity Sling), to Rig Cargo Bag.

(1) Observe procedures in *b*(1) through *b*(9) above.

(2) When using any one of the described four-leg slings, three sling legs may be removed or taped together to prevent interference with the one leg that will be attached to the cargo bag.

(3) Clustered cargo bags may be transported using one sling leg attached to each cargo bag. When clustering, all sling legs must be the same length.

(4) Attach bolt end of medium clevis assembly to cargo bag suspension web D rings. Tighten clevis assembly bolt.

(5) Pass the chain of one sling leg through the bell end of the clevis assembly. Adjust chain length by forcing the selected link into the grab link or hook to form hitch.

(6) The 12-inch ring of the nylon and chain, four-leg sling forms the apex for attachment to the helicopter (UH-1H, CH-47, and UH-60) cargo hook. Use a large clevis to attach the 12-inch ring to the CH-54 helicopter cargo hook.

(7) The metal clevis of the sling, helicopter, cargo carrying external, four-leg sling forms the apex for attachment to cargo hooks on UH-1H, CH-47, UH-60, or CH-54 helicopters. The helicopter must be centered over the load before tension is placed on the cargo bag.

d. Time Required. Four persons can rig the single load in approximately 10 minutes, or the double load in approximately 15 minutes, when using any of the described slings.

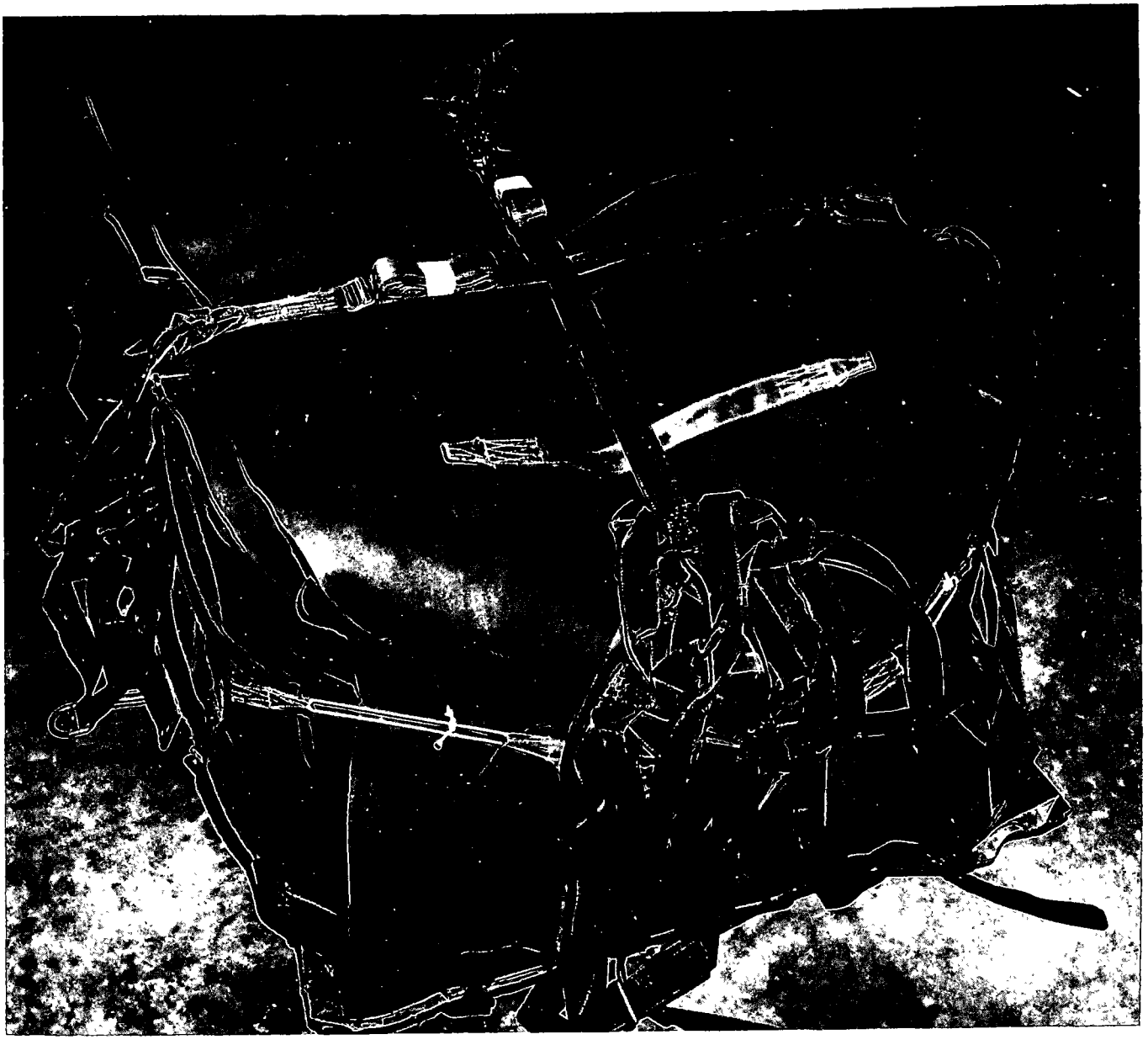


Figure 5-8. Tiedown straps fastened over top of load. Note tape securing excess strapping and nylon cord securing corners of cover.

e. Derigging. Four persons can derig either the single load or the double load in approximately 5 minutes.

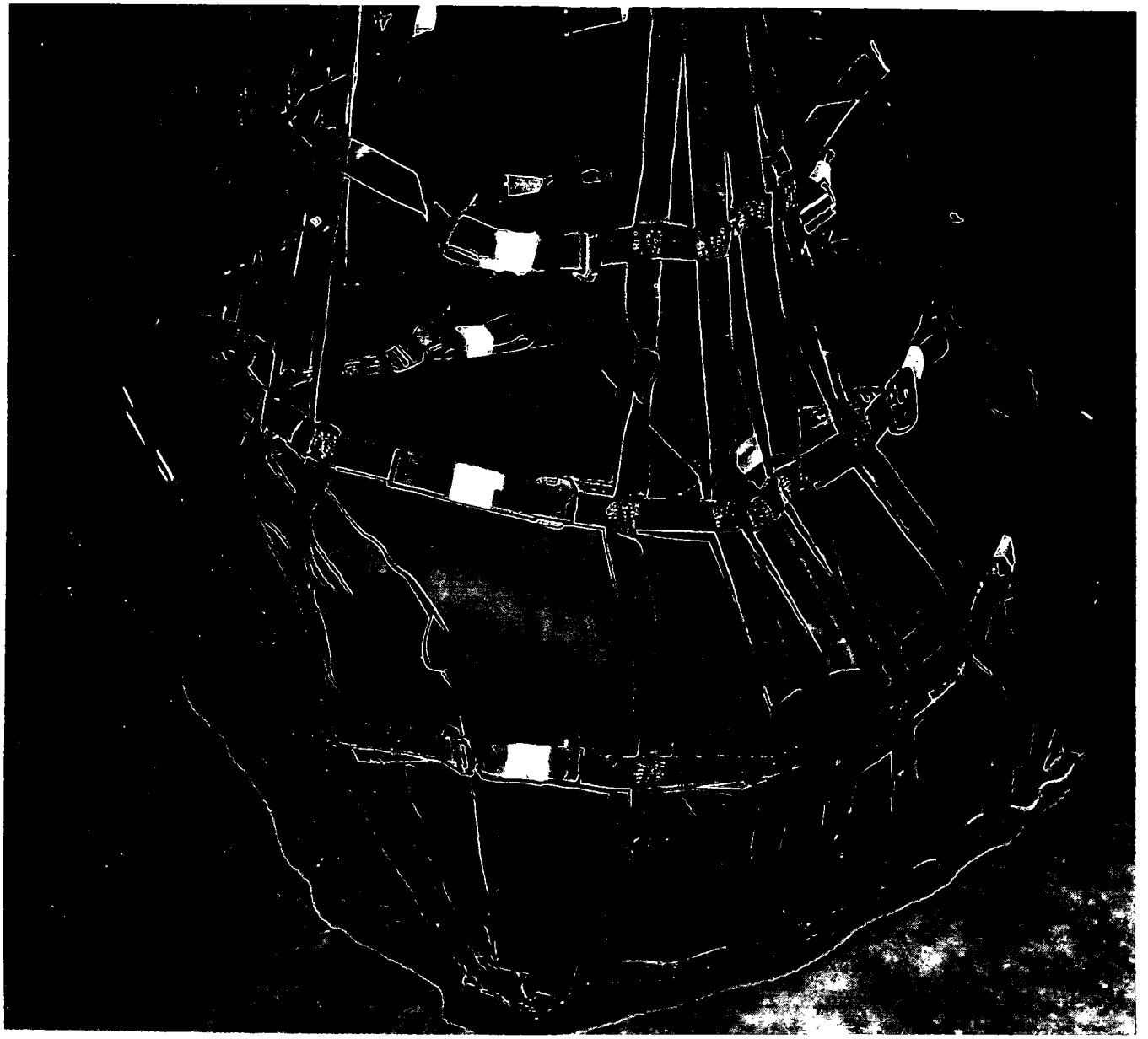


Figure 5-9. Lower and upper lateral straps fastened around the load and secured at corners of cover.

CHAPTER 6

EMERGENCY MOVEMENT BY HELICOPTER

6-1. General

a. This chapter provides for emergency movement of the 8-inch atomic projectile, M422 (table 3-1) for military contingency or logistic supply during periods of tension. It also provides for emergency evacuation under political or military conditions of such nature that noncompliance with portions of the nuclear and flight safety regulations is the only alternative to destruction of weapons.

b. Exercise of emergency movement authority is restricted to situations wherein the security of nuclear assets is endangered or when emergency logistic movement is dictated by a pending regional or world crisis. The determination that emergency movement is justifiable will be approved by the theater commander.

c. Minimum spacing and numerical limits for nuclear weapons and class II nuclear components (projectile case, M500, with M422 projectile in the assembled storage configuration) are necessary to preclude the possibility of nuclear material interaction and to minimize sympathetic detonation of high explosive components in event of an accident. The minimum spacing requirements between nuclear weapons and/or class II nuclear components, provided in section 4, TM 39-45-51A, must be scrupulously observed to preclude the possibility of nuclear material interaction (para 2-1*e*(2)).

d. If emergency logistic movement is directed, there may be an operational necessity to airlift dangerous items that should not be mixed, as indicated in table 2-1, TM 39-45-51C. Should this occur, the commander who ordered the emergency movement may waive the requirements of table 2-1.

NOTE

Tables and tiedown diagrams have not been developed for mixed loads of nuclear weapons or class II nuclear components. This, however, does not preclude the shipment of mixed loads if the limitations specified in TM 39-45-51A and TM 39-20-7 are adhered to.

6-2. Emergency Movement of 8-Inch Atomic Projectile Containers as Helicopter Internal Loads

a. Materials and procedures for transport of the projectile containers (table 3-1) are prescribed by paragraphs 4-1 and 4-2.

b. Maximum container loads shown provide for spacing restrictions when applicable to the individual containers. Transport of mixed containers is authorized; however, such loadings must conform to the provisions of TM 39-45-51A and TM 39-45-51C, and must not exceed helicopter capability.

c. Tie down the containers in the respective helicopter or pod in accordance with the following figures and tables:

Container	*Helicopter*	*Figure No.*	*Table No.*
Projectile, M422, in projectile case, M500	CH-47	6-1	6-1
	UH-60	6-2	6-2
	UH-1D/H	6-3	6-3
	CH-54 (universal military pod)	6-4	6-4
Container, H1343	CH-47	6-5	6-5
	UH-60	6-6	6-6
	UH-1D/H	6-7	6-7
	CH-54 (universal military pod)	6-8	6-8

NOTE

There are no spacing restrictions when transporting the accessory parts case (MS can), which may be loaded to the maximum capability of the helicopter or pod. No tiedown diagram or tiedown data table is shown for maximum loads of the accessory parts case.

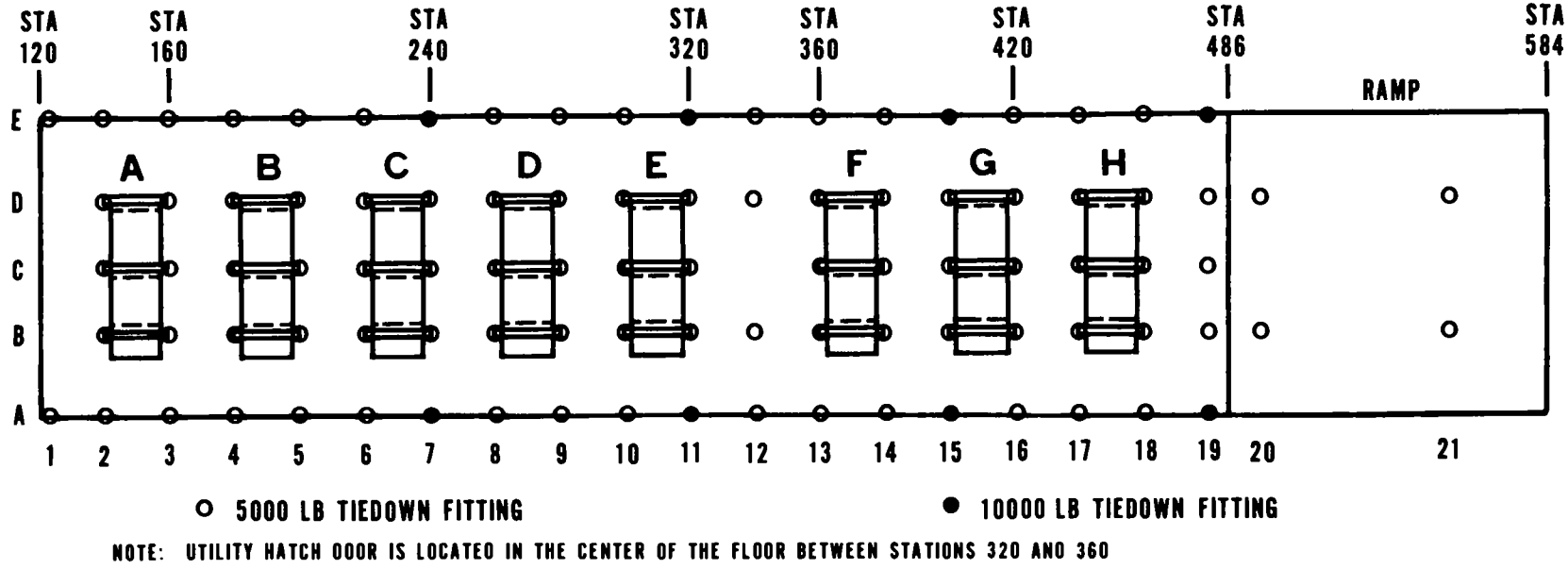


Figure 6-1. Tiedown diagram for maximum load of eight 8-inch atomic projectiles, M422, in CH-47 helicopter.

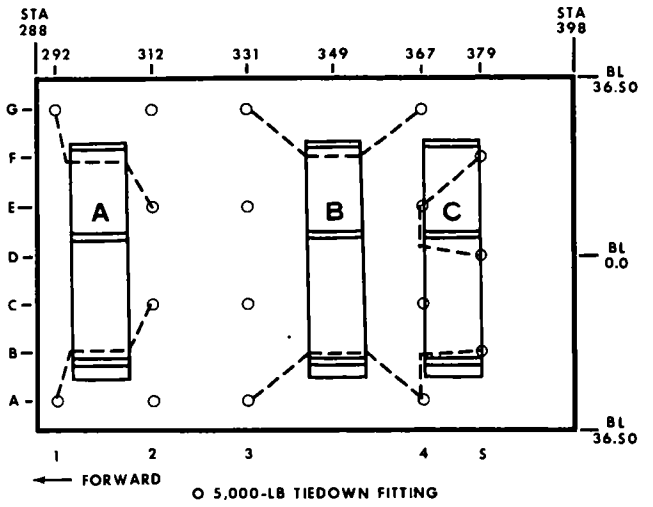


Figure 6-2. Tiedown diagram for maximum load of three 8-inch atomic projectiles, M422, in UH-60 helicopter.

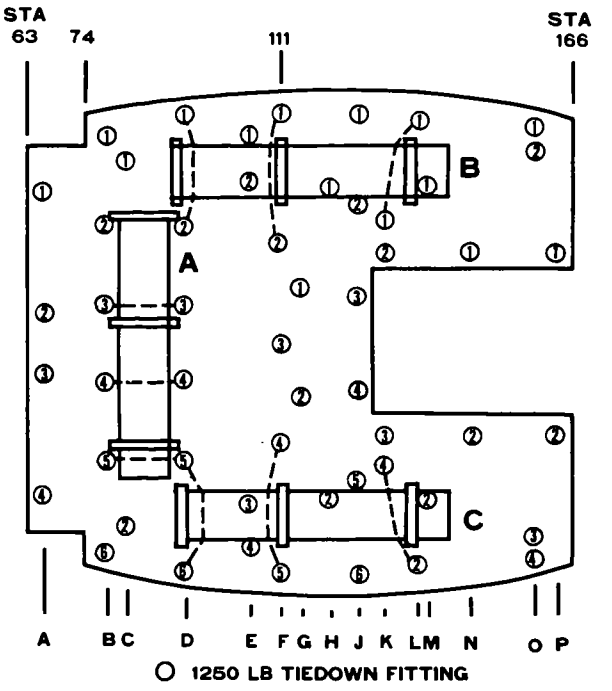


Figure 6-3. Tiedown diagram for maximum load of three 8-inch atomic projectiles, M422, in UH-1D/H helicopters.

Table 6-1. Tiedown Data for Maximum Load of Eight 8-Inch Atomic Projectiles, M422, in CH-47 Helicopter

Item	Tiedown fitting: Designation	Tiedown fitting: Capacity in 1,000 lb	Tiedown device: Type	Tiedown device: Capacity in 1,000 lb	Attach to item
A	B2/B3	5	CGU-1/B	5	Over case above bottom ring roll.
	C2/C3*	5	CGU-1/B	5	Over case below center ring roll.
	D2/D3	5	CGU-1/B	5	Over case below top ring roll.
B through H	Restrain each item in position shown in figure 6-1 and in manner prescribed for Item A above.				

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

Table 6-2. Tiedown Data for Maximum Load of Three 8-Inch Atomic Projectiles, M422, in UH-60 Helicopters

Item	Tiedown fitting: Designation	Tiedown fitting: Capacity in 1,000 lb	Tiedown device: Type	Tiedown device: Capacity in 1,000 lb	Attach to item
A	A1/C2	5	CGU-1/B	5	One complete loop around case above bottom ring roll.
	E2/G1	5	CGU-1/B	5	One complete loop around case below top ring roll.
B	A3/A4	5	CGU-1/B	5	One complete loop around case above bottom ring roll.
	G3/G4	5	CGU-1/B	5	One complete loop around case below top ring roll.
C	A4/B5	5	CGU-1/B	5	One complete loop around case above bottom ring roll.
	C5/E4*	5	CGU-1/B	5	One complete loop around case below center ring roll.
	E4/F5	5	CGU-1/B	5	One complete loop around case below top ring roll.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

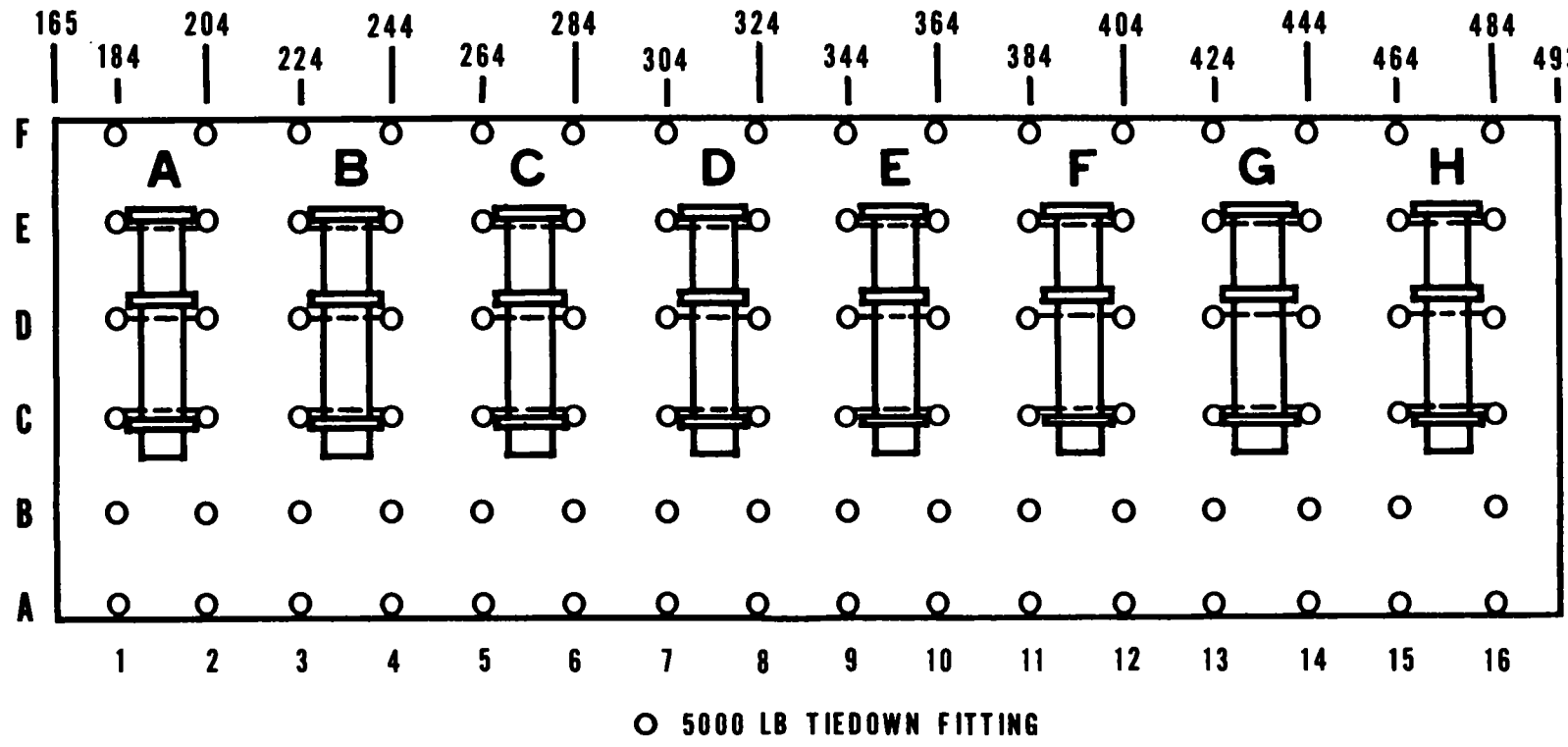


Figure 6-4. Tiedown diagram for maximum load of eight 8-inch atomic projectiles, M422, in CH-54 helicopter universal military pod.

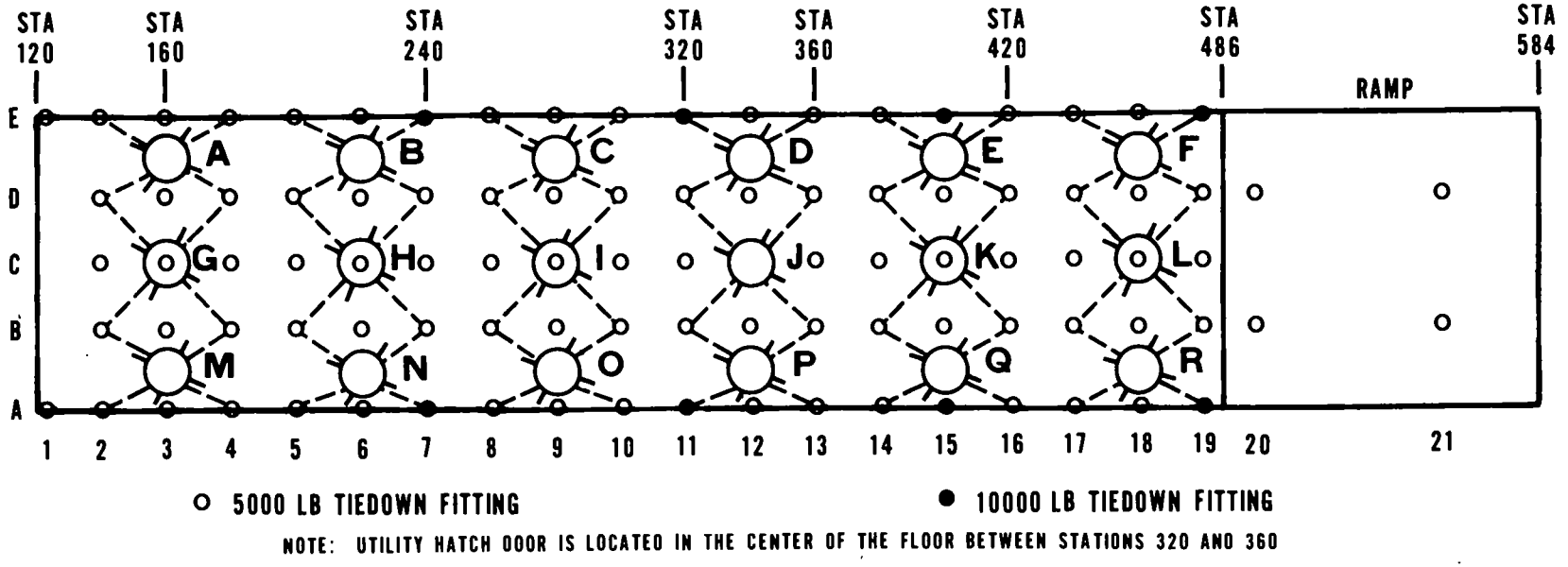


Figure 6-5. Tiedown diagram for maximum load of 18 containers, H1343, in CH-47 helicopter.

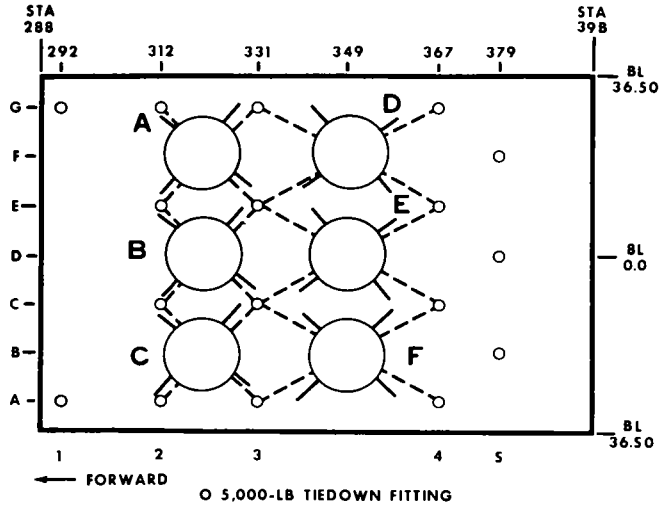


Figure 6-6. Tiedown diagram for maximum load of six containers, H1343, in UH-60 helicopter.

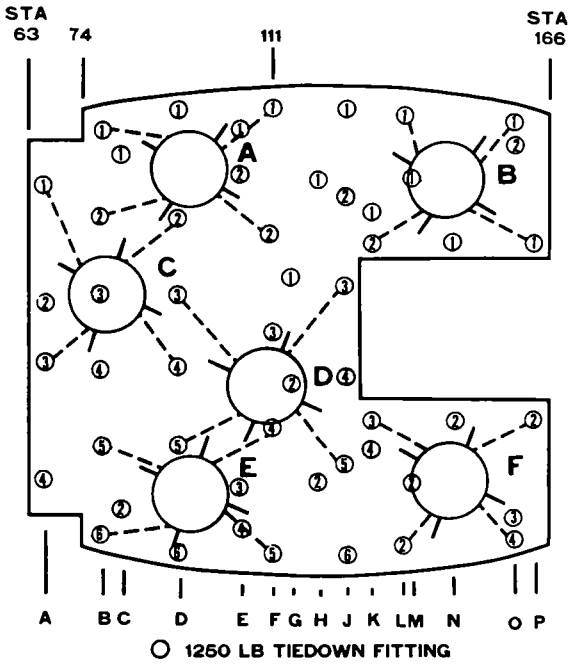


Figure 6-7. Tiedown diagram for maximum load of six containers, H1343, in UH-1D/H helicopters.

Table 6-3. Tiedown Data for Maximum Load of Three 8-Inch Atomic Projectiles, M422, in UH-1D/H Helicopters

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	B3/D3	1.25	CGU-1/B	5	Over case above center ring roll.
	B4/D4*	1.25	CGU-1/B	5	Over case.
	B5/D5	1.25	CGU-1/B	5	Over case below bottom ring roll.
B	D1/D2	1.25	CGU-1/B	5	Over case below top ring roll.
	F1/F2	1.25	CGU-1/B	5	Over case above center ring roll.
	K1/L1	1.25	CGU-1/B	5	Over case above bottom ring roll.
C	D5/D6	1.25	CGU-1/B	5	Over case below top ring roll.
	F4/F5	1.25	CGU-1/B	5	Over case above center ring roll.
	K4/L2	1.25	CGU-1/B	5	Over case above bottom ring roll.

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

Table 6-4. Tiedown Data for Maximum Load of Eight 8-Inch Atomic Projectiles, M422, in CH-54 Helicopter Universal Military Pod

Item	Tiedown fitting		Tiedown device		Attach to item
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	
A	C1/C2	5	CGU-1/B	5	Over case above bottom ring roll.
	D1/D2*	5	CGU-1/B	5	Over case below center ring roll.
	E1/E2	5	CGU-1/B	5	Over case below top ring roll.
B through H	Restrain each item in position shown in figure 6-4 and in manner prescribed for Item A above.				

*Additional tiedown device required when projectile, M422, is in the assembled storage configuration.

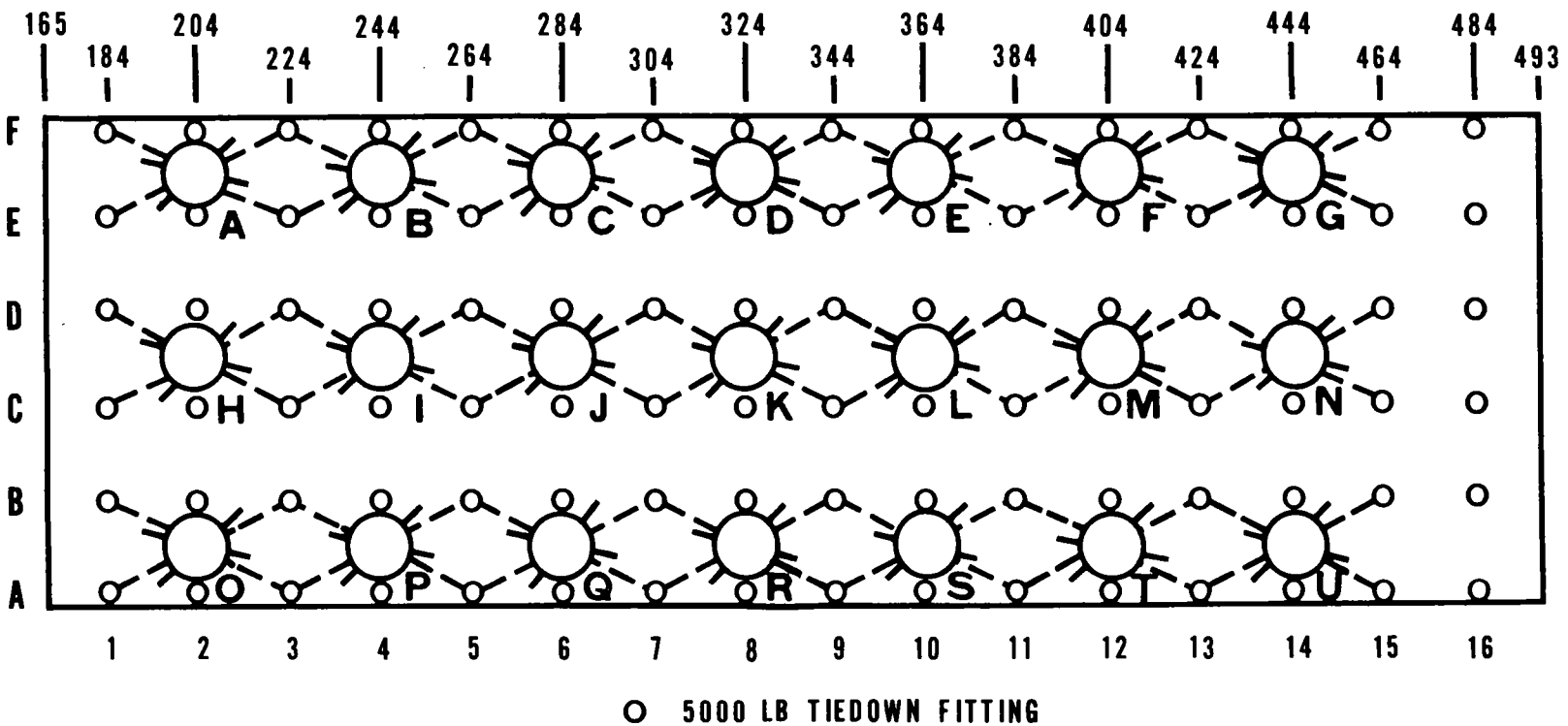


Figure 6-8. Tiedown diagram for maximum load of 21 containers, H1343, in CH-54 helicopter universal military pod.

Table 6-5. Tiedown Data for Maximum Load of 18 Containers, H1343, in CH-47 Helicopter

Item	Tiedown fitting		Tiedown device		
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	Attach to item
A	D2	5	CGU-1/B	5	Left front tiedown ring.
	E2	5	CGU-1/B	5	Right front tiedown ring.
	D4	5	CGU-1/B	5	Left rear tiedown ring.
	E4	5	CGU-1/B	5	Right rear tiedown ring.
B through R	Restrain each item in position shown in figure 6-5 and in manner prescribed for Item A above.				

Table 6-6. Tiedown Data for Maximum Load of Six Containers, H1343, in UH-60 Helicopter

Item	Tiedown fitting		Tiedown device		
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	Attach to item
A	G2	5	CGU-1/B	5	Right front tiedown ring.
	E2	5	CGU-1/B	5	Left front tiedown ring.
	G3	5	CGU-1/B	5	Right rear tiedown ring.
	E3	5	CGU-1/B	5	Left rear tiedown ring.
B through F	Restrain each item in position shown in figure 6-6 and in manner prescribed for Item A above.				

Table 6-7. Tiedown Data for Maximum Load of Six Containers, H1343, in UH-1D/H Helicopters

Item	Tiedown fitting		Tiedown device		
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	Attach to item
A	B1	1.25	CGU-1/B	5	Right front tiedown ring.
	B2	1.25	CGU-1/B	5	Left front tiedown ring.
	F1	1.25	CGU-1/B	5	Right rear tiedown ring.
	F2	1.25	CGU-1/B	5	Left rear tiedown ring.
B	L1	1.25	CGU-1/B	5	Right front tiedown ring.
	K2	1.25	CGU-1/B	5	Left front tiedown ring.
	O1	1.25	CGU-1/B	5	Right rear tiedown ring.
	P1	1.25	CGU-1/B	5	Left rear tiedown ring.
C	A1	1.25	CGU-1/B	5	Right front tiedown ring.
	A3	1.25	CGU-1/B	5	Left front tiedown ring.
	D2	1.25	CGU-1/B	5	Right rear tiedown ring.
	D4	1.25	CGU-1/B	5	Left rear tiedown ring.
D	D3	1.25	CGU-1/B	5	Right front tiedown ring.
	D5	1.25	CGU-1/B	5	Left front tiedown ring.
	J3	1.25	CGU-1/B	5	Right rear tiedown ring.
	J5	1.25	CGU-1/B	5	Left rear tiedown ring.
E	B5	1.25	CGU-1/B	5	Right front tiedown ring.
	B6	1.25	CGU-1/B	5	Left front tiedown ring.
	F4	1.25	CGU-1/B	5	Right rear tiedown ring.
	F5	1.25	CGU-1/B	5	Left rear tiedown ring.
F	K3	1.25	CGU-1/B	5	Right front tiedown ring.
	L2	1.25	CGU-1/B	5	Left front tiedown ring.
	P2	1.25	CGU-1/B	5	Right rear tiedown ring.
	O4	1.25	CGU-1/B	5	Left rear tiedown ring.

Table 6-8. Tiedown Data for Maximum Load of 21 Containers, H1343, in CH-54 Helicopter Universal Military Pod

Item	Tiedown fitting		Tiedown device		
	Designation	Capacity in 1,000 lb	Type	Capacity in 1,000 lb	Attach to item
A	E1	5	CGU-1/B	5	Left front tiedown ring.
	F1	5	CGU-1/B	5	Right front tiedown ring.
	E3	5	CGU-1/B	5	Left rear tiedown ring.
	F3	5	CGU-1/B	5	Right rear tiedown ring.
B through U	Restrain each item in position shown in figure 6-8 and in manner prescribed for Item A above.				

6-3. Emergency Movement of 8-Inch Atomic Projectile Containers as Helicopter External Loads

WARNING

The container, H1343, must stand on base for storage and shipment.

NOTE

External loads have not been developed for maximum loads of individual or mixed nuclear weapons or class II nuclear components. This, however, does not preclude such external loads if the limitations specified in TM 39-45-51A and TM 39-20-7 are adhered to and if the loads are justifiable and directed. Also applicable are the limitations for external transport by helicopter (chapter 5).

a. Materials and procedures for transport of the projectile containers (table 3-1) are prescribed by chapter 5.

b. External loads of individual or mixed projectile containers must not exceed the rigging materiel capacities shown in chapter 5 or the helicopter capability. Also, the loads must conform to specified spacing restrictions.

c. Individual or mixed external loads of the following items can be made with no spacing restrictions:

(1) Projectile, M422, in projectile case, M500, when in the stockpile storage configuration (configuration I).

(2) Accessory parts case (MS can).

(3) Container, H1343.

APPENDIX

REFERENCES

1. Army Regulations (AR)

10-16	US Army Nuclear and Chemical Agency
40-14	Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials
50-5	Nuclear and Chemical Weapons and Materiel: Nuclear Surety
(C) 50-5-1	Nuclear and Chemical Weapons and Materiel: Nuclear Surety (U)
(C) 5-103	Safety Rules for the Operation of the 8-inch Howitzer Nuclear Weapon System (U)
55-203	Movement of Nuclear Weapons, Nuclear Components, and Related Classified Nonnuclear Materiel
95-1	Army Aviation: General Provisions and Flight Regulations
95-27	Operational Procedures for Aircraft Carrying Hazardous Materials
360-5	Public Information
385-40	Accident Reporting and Records
700-65	Nuclear Weapons and Nuclear Weapons Materiel
740-1	Storage and Supply Activity Operations

2. Army Field Manuals (FM)

55-413	Aerial Recovery of US Army and Air Force Aircraft
55-450-1	Army Helicopter External Load Operations
100-50	Operations for Nuclear-capable Units
101-20	US Army Aviation Planning Manual

3. Army Technical Bulletins (TB)

(SRD) 9-1100-811-40	Security Classification of Nuclear Weapons Information (U)
385-2	Nuclear Weapons Firefighting Procedures

4. Army Technical Manuals (TM)

5-315	Fire Fighting and Rescue Procedures in Theaters of Operations
9-1100-218-10	Operators Manual: M422 Atomic Projectile
(CRD) 9-1100-218-20	Organizational Maintenance: M422 Atomic Projectile, M423 Training Atomic Projectile
9-1100-218-20/1	Organizational Maintenance: M424 Spotting Projectile; XM440 Training Projectile
9-1300-206	Ammunition and Explosives Standards
38-250	Packaging and Materials Handling: Preparation of Hazardous Materials for Military Air Shipment
(CRD) 39-0-1A	Numerical Index to Joint Atomic Weapons Publications (Including Related Publications) (Army Supplement) (U)
(SRD) 39-20-7	Nuclear Safety Criteria (U)
(CRD) 39-20-11	General Firefighting Guidance for Nuclear Weapons (U)
39-45-51	Transportation of Nuclear Weapons Materiel
(CRD) 39-45-51A	Transportation of Nuclear Weapons Materiel (Supplement): Shipping and Identification Data for Stockpile Major Assemblies (U)
39-45-51C	Transportation of Nuclear Weapons Materiel (Supplement): Military Criteria for Shipment
(CRD) 39-50-8	Emergency Destruction of Nuclear Weapons (U)
55-450-8	Air Transport of Supplies and Equipment: External Transport Procedures

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55-450-11	Air Transport of Supplies and Equipment: Helicopter External Loads Rigged with Air Delivery Equipment
55-450-12	Air Transport of Supplies and Equipment: Helicopter External Loads for Sling, Nylon and Chain, Multiple Leg
55-450-18	Air Transport of Supplies and Equipment: Internal and External Loads, CH-47 Helicopter
55-1520-209-10	Operator's Manual: Army Model, CH-47A Helicopter
55-1520-210-10	Operator's Manual: Army Model, UH-1D/H and EH-1H Helicopters
55-1520-217-10-1	Operator's Manual: Army Model, CH-54A Helicopter
55-1520-217-10-2	Operator's Manual: Army Model, CH-54B Helicopter
55-1520-227-10-1	Operator's Manual: Army Model, CH-47B Helicopter
55-1520-227-10-2	Operator's Manual: Army Model, CH-47C Helicopter
55-1520-237-10	Operator's Manual: Army Model, UH-60A Helicopter

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